AIR CONDITIONING & REFRIGERATION NEWS
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Stories of the Week
All Is Not Gold
The Smiling Chinese
Best Air Conditioning Service In the World
Room Air Conditioners—Big Business
The World In Capsule
Sports Note

Stories of the Week

Singapore has done an excellent job of cleaning up its insects; but throughout all the East it is an exception in this regard.

Travellers take daily doses of a potent drug to ward off mosquito-borne malaria everywhere else (it doesn't ward off the mosquitoes though).

And then there's the place where the best time to visit the Men's Room is during mealtimes. That's when the flies move out into the Dining Room.

Radio "commercial" overheard in Singapore: "MEN: buy your wife a new television set for her birthday or wedding anniversary. Our terms are so easy she can pay for it out of her housekeeping money."

All Is Not Gold

Despite the fact that overseas air travel has "shrunken the globe" to the point where a working trip around the world in 50 days is possible, one sometimes longs for the good old days of ships (on which one could rest a bit between strenuous visits) and trains (which run on time).

Over here, they call the British Overseas Airways the "British Overdue Airways." Although obviously unfair as a generalization, it was exhaustingly true in our case (Sydney to Singapore).

Normally 23 hours in flight, this plane trip stretched out from Saturday afternoon until Monday morning—with interminable and intolerable waits at Darwin and Jakarta, Indonesia (no sleep at all).

There was supposed to be a comic opera war of some sort going on in Indonesia. So, along with Australian Davis Cup tennis star Ashley Cooper, we killed time by trying to find it—or at least learn something about it.

Net: nothing. These people don't like to fight, and don't fight. They're truly peaceful. Whatever scrimmaging may go on occasionally is done by mercenaries. American soldiers of fortune? Chinese Communists?

(Concluded on Page 8, Col. 1)

Memphis Residential Sales Down; Profitable Jobs 'Hard To Find'

By George M. Hanning

MEMPHIS — Some 25 contractors and distributors installed 1,064 residential air conditioning units in the Memphis area during 1957, a personal interview survey by AIR CONDITIONING & REFRIGERATION NEWS has revealed.

However, the local electric utility reports that 1,158 residential units were placed on its lines in the city and Shelby county last year.

This figure is probably more accurate. The NEWS figure does not include statistics from one major contractor and seven small ones who were out of business or otherwise not reachable by the NEWS reporter. The small contractors are known to have installed at least 25 units last year.

The major contractor could well have made up the 94-unit difference between the NEWS' and the utility's totals.

Even using the utility figure, sales of residential units were down about 7% from 1956. The NEWS reported 1,240 units installed in that year.

Talking with contractors and

(Concluded on Page 20, Col. 1)

Merger Plans Move Ahead

MCAA-NAPC

LOS ANGELES — Merger with the National Association of Plumbing Contractors and "any other related trade association having these common interests" was advanced by adoption of a resolution at a general session of members of the Mechanical Contractors Association of America meeting here May 20-23 for their 69th annual convention.

This is a summary of the resolution:

Fundamental changes have occurred in plumbing, heating and piping, air conditioning, and related industries, during the last 10 years.

Members feel the need of a strong, unified voice in dealings with labor, government, other segments of the construction industry, and distributive systems outside the industry.

There is an increasing trend to various combinations of what were once widely separated trades.

More than half the members of MCAA also belong to NAPC, and have the problem of maintaining dual or multiple memberships in national associations which actually have common interests.

The board of directors of MCAA was instructed to appoint a representative exploratory committee to meet with

(Concluded on Back Page, Col. 2)

• • •

ASRE-ASHAE

NEW YORK CITY—A "tentative schedule of action" on the proposed consolidation of the American Society of Refrigerating Engineers and the American Society of Heating & Air-Conditioning Engineers has been issued by the national offices of the ASRE.

The plans for this consolidation are still in the process of formation by the ASHAE-ASRE Committee on Cooperation and considerable detail remains to be completed, it was stated. When the consolidation plan is completed, members of both so-

(Concluded on Back Page, Col. 1)

15 Room Unit Producers Set NEMA Section Rolling

NEW YORK CITY—Fifteen manufacturers attended the first full-fledged meeting of the new room air conditioner section of the National Electrical Manufacturers Association here recently.

They elected a chairman and vice chairman, and organized a general engineering committee that will begin work immediately on the development of product standards.

J. B. Ogden, general manager of the air conditioning division of Whirlpool Corp., was elected section chairman. He had served as temporary chairman since the section's organizational meeting in April.

Paul Augenstein, general manager of the room air conditioner department, major appliance division, General Electric Co., was elected vice chairman.

Chairman of the general engineering committee will be elected June 10 when the committee holds its first meeting. The committee will be composed of one representative from each

(Concluded on Page 4, Col. 5)

ASRE To Vote On Proposed B9.1 Changes

DETROIT — Significant proposed revisions to the American Standard B9.1 "Safety Code for Mechanical Refrigeration" will be voted on by American Society of Refrigerating Engineers at its 54th annual meeting in Minneapolis June 23.

While some of the changes are editorial alterations, others carry major significance for engineers, installers, and servicemen, according to Frank Drogosch, chief safety engineer, Detroit, and John Rehard, J. C. Rehard & Associates, both of whom were familiar with development of proposed revisions.

Changes are also significant to many city inspectors where the ASA-B9 has been adopted by reference as part of the city's building or safety code.

Perhaps the major revision is the proposed inclusion of *limited*

(Concluded on Page 5, Col. 1)

Revised Room Unit Ratings

Seven manufacturers or private brand merchandisers are listed for the first time in the recently-issued second edition of the Air-Conditioning & Refrigeration Institute's 1958 list of room air conditioner B.t.u.h. ratings.

The new edition is based on reports of 31 manufacturers and merchandising companies. In the new booklet, 15 manufacturers have added to their model listings or revised the ratings of some models as published in the April 4 edition, and the ratings of nine remain the same.

The complete revised list appears on pages 10 and 11.

BEHIND PAGE ONE . . .

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Apprentice Fund Payments Legal, MCAA Told

LOS ANGELES — Payments made by contractors into joint apprentice training trust funds are legal and are not contrary to provisions of the Taft-Hartley Act, Peter T. Schoemann, president of the United Association of Plumbers and Pipefitters (AFL-CIO), asserted at the annual convention of the Mechanical Contractors Association of America, Inc. here.

He said the recent court decision in the sheet metal workers case was not applicable to most of the 8,000 joint apprentice committee trust funds in American industry.

Legality of such funds has been established, Schoemann stated, by the union's own general counsel as well as by "official assurance" from the U. S. Dept. of Labor.

Schoemann gave his blessing to the proposed merger between MCA and the National Association of Plumbing Contractors.

"It should lead the way to greater cooperation between all branches of our industry on matters of common concern than we have ever had before, he declared.

Schoemann warned the contractors that the "five foot rule" is not dead in the proposed Federal Construction Contract Procedures Act that is currently waiting Senate action.

The five-foot rule is one that

(Concluded on Back Page, Col. 4)

See Limited Excise Tax Cuts as Possibility

WASHINGTON, D. C.—Though President Eisenhower has asked Congress to extend the present excise tax rates beyond the July 1 deadline, reports here indicate that Congress might possibly reduce the levies on transportation, automobiles, and some unspecified appliances.

Only air conditioning product that might be affected is fractional horsepower air conditioners now covered by a 10% levy. Refrigerators, freezers, and combinations are covered by a 5% levy.

Congressional strategists see the House passing a bill with no tax cuts and the Senate authorizing some. Then in committee, the two houses would agree on a very limited number of cuts.

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April Non-Residential Building Contracts Up 8% In 37 States East of Rockies

NEW YORK CITY — April contracts for non-residential building in the 37 states east of the Rockies totaled 18% higher than for the same 1957 month, according to F. W. Dodge Corp., construction news and marketing concern.

"Encouraging signs" of an upturn in construction contract awards were noted by George C. Smith, vice president of the firm, on the basis of partial figures now available. The move follows four months of sharp drops from year-ago levels.

"There was also a 13% increase in apartment house contracts and other large residential buildings, an 18% rise in commercial buildings, and a 16% upswing in streets and highways in the 37-state area," Smith added.

Percentages were based on final figures in the 37 states, but were incomplete in that they covered neither far western states nor one and two-family dwellings.

School building contracts rose 18% "in sharp contrast to the generally downward trend of the past several months," Smith indicated. Also reversing the trend of recent months were public works contracts which rose 33% in April, he said. Contracts for manufacturing construction were down 8% but "even this is encouraging since this category has been down as much as 50% during recent months."

Buffalo Plans Code To Do Away with 'Fly-by-Night' Firms

BUFFALO—The task of preparing a heating code has been started by a special committee of the Common Council.

Councilman Vincent P. Masterson presided at a meeting of the committee attended by more than 50 heating contractors and their representatives. Masterson said it was the committee's intention to draft a code that will do away with "fly-by-night" installers of heating equipment and protect the public and reputable contractors.

A warning that the code would be useless unless means to enforce it are implemented was sounded by John C. Quinlan, chief of the city Smoke Abatement Bureau.

March Refrigerator Sales Hit 261,100; Farm, Home Freezer Volume Is 75,400

NEW YORK CITY—Total industry sales of electric household refrigerators in March reached 261,100 as compared with 309,300 in the same month a year ago, National Electrical Manufacturers Association reports.

Refrigerator sales for the first three months of this year were 695,000, a drop from the 913,400 of the same 1957 period. Total sales include exports.

Farm and home freezer sales hit 75,400 in March, off from the 81,400 of the like 1957 month. The 204,900 moved in the first three months of this year was a dip from the 223,200 of a year ago, it was noted.

Total refrigerator sales by size of unit saw the 12-cu. ft. size topping the 13-cu. ft. unit slightly, 23.8% to 23.4%. The 11-cu. ft. size was only a short way back with 22.6% of total sales.

With 42.6% of total freezer sales being made in chest models and 57.4% in uprights, the 9-14-cu. ft. size grabbed off 36.6% of the total while the 15-17-cu. ft. unit sales amounted to 28.2%.

Air Conditioning, Refrigeration Sales Dip 1% for Distributors

WASHINGTON, D. C. — Air conditioning and commercial refrigeration equipment distributor's March sales dipped 1% from the same 1957 month but boomed up 29% over February of this year, the Bureau of the Census reports.

Sales for the first three months of 1958 dropped off 5% from the like 1957 period, however. Inventories in March rose 7% over February but fell back 3% from March, 1957.

Plumbing and heating equipment and supplies distributors' March sales were 13% below those of the same month a year ago and 6% higher than this February. First three months' sales were 10% lower than the like 1957 period. Inventories declined 1% in March from February and 6% from the same month last year.

March sales of all types of merchant wholesalers as a group showed a seasonal increase of 8% over February but were off 9% from March a year ago, and first-quarter sales were 10% below those in the first 1957 quarter, the Census Bureau indicated.

Higbie Will Build Steel Tubing Plant

ROCHESTER, Mich.—Higbie Mfg. Co. here will build a $500,000 plant in Archbold, Ohio to make small-diameter, thin-wall steel tubing for the refrigeration and automotive industries, it was announced by C. M. Higbie, Jr., president.

He said construction will start within 30 days on the 30,000-sq. ft. plant, to be built on a 15-acre site. It will be known as The Fulton Tubing Co. and will operate as a division of Higbie.

The location was selected because of its proximity to raw materials and prospective customers, Higbie explained. Milton Hoagland of the parent company will be general manager.

Manufacturing operations are scheduled to begin early in January of 1959.

Higbie produces steel tubing at its Avon Tube Div. in Rochester and fishing reels at the Bronson (Mich.) Reel Co.

For Your Reprint Copy

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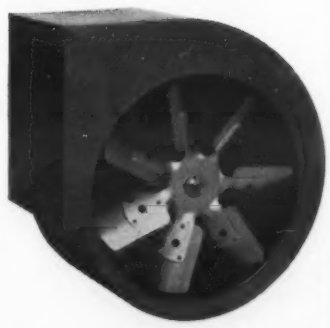
IT'S THE GREAT NEW TORRINGTON MIXED-FLOW RADIAX ▮ 6 SIZES FROM 300 TO 3000 CFM ▮ SAVINGS UP TO $10 PER UNIT ▮ SIZE, WEIGHT AND MOTOR ECONOMY ▮ PLUS TORRINGTON REPUTATION ▮ FULL DETAILS AND ENGINEERING SERVICE ON REQUEST



IN YOUR '59 DESIGNS

THE TORRINGTON MANUFACTURING COMPANY

TORRINGTON, CONNECTICUT • VAN NUYS, CALIFORNIA • OAKVILLE, ONTARIO

YOU CAN COVER THE WATERLESS FRONT WITH THIS

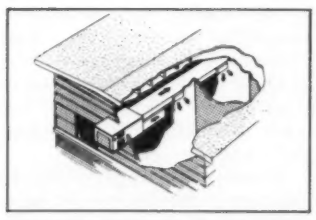
NEW • VERSATILE • COMPACT

GENERAL ELECTRIC AIR-COOLED PACKAGED COOLING UNIT

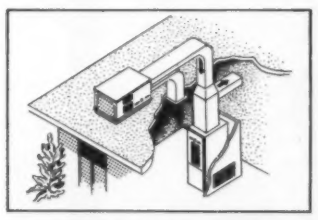
DESIGNED FOR 2 MARKETS

This versatile General Electric Air-Cooled Unit—that uses no water—opens a vast double residential market for you. 1. Homes without ductwork—using steam or hot water heating, or without central heating. 2. Homes with ductwork. This unit—equipped with its own blower—may be used with either an existing duct system or an independent one. Smart, compact and easy to install anywhere (see diagrams), simple to maintain—and certain to sell!

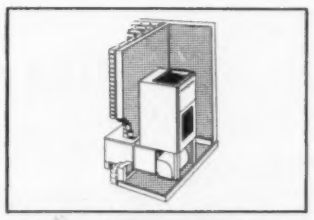
The new General Electric Air-Cooled Packaged Unit is a natural for the commercial and industrial market. Used with decorative Diffuser-Filterframe, it can be installed without ductwork. Compact, lightweight, smartly designed, it may be mounted conveniently through-the-wall. Electrical resistance heater can be easily added for year-round air conditioning. Here is a unit that is a profit-maker in every market.



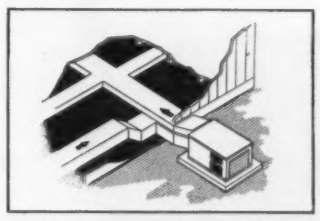
CENTRAL HALLWAY INSTALLATION. Install false ceiling and use as duct to carry cool air through high registers. Return air can be brought back via grille located near unit.



FLAT OR LOW-PITCHED ROOF INSTALLATION. Entire unit may be mounted outside house. Ductwork may be extended from unit on roof to connect with new or existing system.



BASEMENT INSTALLATION. Cold air is ducted from unit to discharge of furnace and distributed through existing ductwork. Return air taken from furnace. Dampers control distribution.



SLAB HOUSE OR CRAWL SPACE INSTALLATION. Mounted outside house. Ducts may be run in crawl space or exterior walls to central system. Return air from grille located near unit.

SMALL STORE, OFFICE OR COMMERCIAL INSTALLATION. Mount in transom or through wall. Or entire unit may be mounted outside. Ductwork connects with new or existing distribution system.

PART OF GENERAL ELECTRIC'S BLUEPRINT FOR LEADERSHIP PLAN

Advanced new products, such as the General Electric Air-Cooled Packaged Unit are only the beginning! More will be coming your way—the latest developments in heating and cooling products for homes, stores, offices and factories. For General Electric's Blueprint for Leadership Plan calls for a continuing program of new product development, sales training aids, financing plans, national and local advertising—the best of everything to assure the leadership position for General Electric dealers. Why not plan *your* future with General Electric? Contact your nearest General Electric distributor—you'll find him listed in the *yellow pages* of your telephone directory...or mail coupon today.

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Air Conditioning Dept., Tyler, Texas

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I am interested in signing up with General Electric so that I can benefit from G.E.'s Blueprint for Leadership Plan.

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Whirlpool Says Room Unit Carryover Selling Out Rapidly at Stable Prices

ST. JOSEPH, Mich.—All but seven of the 17 room air conditioner models with which Whirlpool Corp. went into 1958 were virtually sold out of factory inventories by May 26, Joe B. Ogden, Whirlpool's general manager of air conditioning, announced.

Two of these, a 1-hp. unit and a 2-hp. unit, have even disappeared from distributor stocks, he said.

"Since the selling season is just now getting started," Ogden declared, "we find this a somewhat unique experience—particularly in view of all the current talk about a recession. Not only have sales been beyond our expectations, but they have also been accomplished at stable price levels and our best seller has been a 2-hp. unit."

Much of the company's success, he said, has been due to the reception accorded the new "RCA Whirlpool Imperial" models.

"Like everybody else in the industry," Ogden said, "we went into 1958 with substantial carryover inventories and we tailored our production accordingly. However, we recognized that air conditioning is no longer a novelty to the consumer and that he now demands units of sufficient capacity to do a real cooling and dehumidifying job. Accordingly, we dropped all units of less than 1 hp. from our 1958 line and materially increased the production of 2-hp. models—units big enough to cool more than one average room."

He cited Whirlpool's "Vegas-Whirl-Win" promotion as a strong factor in early season sales and credited it with a 43% increase in the average number of units purchased per dealer during the first three months of the year over the same period in 1957. By late May, he said, 40% of all air conditioning dealers had qualified for five-day September trips to Las Vegas and stays at the Flamingo hotel. By the end of June, he predicted, over 60% of the company's dealers would be winners.

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Only 25¢ each.

L. G. Porter Elected Long Mfg. Div. Pres.

DETROIT—Election of L. G. Porter to become president and general manager of Long Mfg. Div. of Borg-Warner Corp. in Detroit and Long Mfg. Co. Ltd. of Canada, a subsidiary, was announced following a meeting of the Long board of supervisors.

Porter, who also is executive vice president of Borg-Warner, succeeds T. J. Ault, who has resigned as president of Long, effective July 1, to become president of Saco-Lowell Shops.

Harry H. Whittingham now becomes assistant general manager of Long Mfg. Div. in addition to continuing as its vice president.

Charles F. Stevenson continues as executive vice president of Long Mfg. Co. Ltd. at Oakville, Ont., Can.

Wichman Succeeds Sharp as Hotpoint General Manager

NEW YORK CITY—Appointments of William C. Wichman as general manager of the Hotpoint Co. and Reginald H. Jones to succeed Wichman as general manager of the General Electric Supply Co. were announced recently by James H. Goss, vice president and group executive of the General Electric Co.'s consumer products group.

Wichman succeeds John C. Sharp, who retired May 31. Sharp will continue for several months as a consultant to Wichman, it was reported.

Wichman has been with General Electric since 1928. He was made a vice president in 1952 and general manager of G-E Supply just last March.

Jones, until just recently, was general manager of G-E's air conditioning division.

Philadelphia Distributor Room Unit Sales Rise

PHILADELPHIA — Distributor sales of air conditioners to dealers in this area in April rose to 7,872 from 4,833 in the like year-ago period, according to the Electrical Association of Philadelphia.

This brought sales for the first four months of 1958 to 22,291 compared with 18,361 for the same period of 1957.

NEMA Section--

(Concluded from Page 1, Col. 5)

member company.

The committee has also been assigned the tasks of developing test standards for room air conditioners and of considering problems involved in certification or similar programs.

NEMA's new room air conditioner section will continue to cooperate with the Air-Conditioning & Refrigeration Institute, it was reported. For the immediate future, at least, joint NEMA-ARI statistical data will be issued.

Joseph F. Miller, NEMA's managing director, said he anticipated that more than 70% of the industry's May shipments will be reported to the association. This is a gain of about 20% over the total reported to NEMA in April.

Attending the May 27 meeting were representatives of the following companies:

Whirlpool Corp.; General Electric Co.; York Div. of Borg-Warner Corp.; Hotpoint Co., division of General Electric Co.; Amana Refrigeration, Inc.; Airtemp Div. of Chrysler Corp.; Gibson Refrigerator Co., division of Hupp Corp.; Coolerator Div., McGraw-Edison Co.; Fedders-Quigan Corp.; Kelvinator Div., American Motors Corp.; Frigidaire Div., General Motors Corp.; Emerson Radio & Phonograph Corp.; Welbilt Corp.; the O. A. Sutton Corp.; and Westinghouse Electric Corp.

Four companies unable to be represented at the meeting but already members of the section by virtue of their membership in NEMA are Philco Corp., Emerson Electric Mfg. Corp., Admiral Corp., and Cory Corp.

How to keep consistent temperatures and/or prevent condensation on warm or cold lines

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Rubatex Tubing can be slipped onto piping before it's installed on air conditioning unit or system.

Flexible tubing can be easily installed onto piping with swings and bends up to 180°.

Slit tubing with adhesive applied fits snugly onto joint.

Complete data, applications and specifications on RUBATEX Closed Cellular Tubing Insulation—specially developed tubing for OEM, commercial, industrial and residential heating and cooling lines, chilled water and other cold lines where service conditions are moderate.

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Bedford, Virginia

Name _____

Type of Business _____

Proposed Application _____

Attach to your letterhead and mail this coupon for your copy of new Rubatex Tubing Bulletin today!

B9.1 Code--

(Concluded from Page 1)

charged systems in the code, with specific sections concerning it differing from the general requirements of the code. Test pressures and equipment requirements for limited charged systems are listed as exceptions to several sections of the code.

Since the charge is limited, according to Rehard, the total pressure possible in such systems, even if all the refrigerant evaporates, will not approach the limits set for normal units, and it seems unnecessary to saddle such systems with requirements which are designed for more usual equipment. In addition, he said, "most limited charged systems are custom jobs with which the general public will not rub elbows."

The term *internal gross volume* is clearly defined and inserted in several sections because of the former misunderstanding and controversy over whether internal parts of a unit should be subtracted from the gross volume in determining safety limits. According to the authorities, the risk factor must always be determined on gross volume *without* any allowance for internal parts.

The section (13.7) on relief devices has been altered to omit any allowance for function above design working pressure of the vessel. The present code allows rupture members and pressure-relief valves which "shall function at a pressure not to exceed 20% above the design working pressure of the vessel."

In dealing with open flames in institutions and places of public assembly, recognition is given the fact that such places as churches and mortuaries will normally have lighted candles in the room. (6.2.4.)

Concerning test pressures (10.2.1) clarification is made that the test pressures must be *at least* equal, not necessarily *exactly* equal to the design working pressure of the pressure vessels or to the setting of the pressure-relief device.

Text of Proposal

Official text of the proposed revisions:

PROPOSED REVISION TO AMERICAN STANDARD B9.1

SAFETY CODE FOR MECHANICAL REFRIGERATION

(For reference Use 1953 Safety Code for Mechanical Refrigeration)
All references to codes and standards are according to the latest available.

Editorial renumbering of paragraphs due to changes or additions not included herein.

SECTION 2. DEFINITIONS

ADDITIONS:

2.6 **Companion or Block Valves** are pairs of mating stop valves, valving off sections of systems and arranged so that these sections may be joined before opening these valves or separated after closing them.

2.31 **Internal Gross Volume** is the volume as determined from internal dimensions of the container with no allowance for volume of internal parts.

2.32 **Limited Charged System** is a system in which with the compressor idle, the internal volume and total refrigerant charge are such that the design working pressure will not be exceeded by complete evaporation of the refrigerant charge.

SECTION 3. BUILDING OCCUPANCY CLASSIFICATION

3.4 Delete: **for more than two families.** Add the word **Residences** after the word **Apartments.**

SECTION 5. REFRIGERANT CLASSIFICATION

5.1.1 Group 1. All trade name refrigerants are to be changed to the numerical refrigerant designation according to ASRE Standard 34-57. Add Refrigerant 13.

SECTION 6. REQUIREMENTS FOR INSTITUTIONAL, PUBLIC ASSEMBLY, RESIDENTIAL AND COMMERCIAL OCCUPANCIES

Table 1. All trade name refrigerants are to be changed to the numerical refrigerant designation according to ASRE Standard 34-57. Monochlorotrifluoromethane $CCIF_3$ (Refrigerant 13) 27lb.

6.2.4 Delete: **and Public Assembly** in the heading and first sentence.

SECTION 9. REFRIGERANT PIPING, VALVES, FITTINGS AND RELATED PARTS

9.3.1 Change **2 inches and larger** to **larger than 4 inches.** Paragraph 9.6 should be positioned before 9.6.1.

SECTION 10. DESIGN AND CONSTRUCTION OF EQUIPMENT

10.1.1 Delete **and** after **gauges** and add **and limited charged systems** after **mechanisms.** Add at end of paragraph: Limited charged systems equipped with a pressure relief device, shall be designed, constructed, and assembled to be capable of withstanding a test pressure not less than 1.5 times the setting of the pressure relief device without being stressed beyond ⅓ of its ultimate strength.

10.2 Add at end of paragraph: **except limited charged systems.**

10.2.1 Add **at least** before **equal** and italicize **Design working pressure.**

ADDITION:

10.2.2 Limited Charged **Unit Systems shall** be tested in accordance with 10.2 except that limited charged unit systems equipped with a pressure relief device may be tested and proved tight at a pressure not less than 1½ times the setting of the pressure relief device.

10.4.2 Add after **90% of the setting of pressure-relief device** the words **installed on the high side of a system.**

SECTION 12. RELIEF DEVICES IN GENERAL

12.1 Delete **soldered joints, lead gaskets, fusible plugs, or other parts of the system** and subsitute **some part of the system.**

12.1.5 Add after **fusible plug** the words **discharging to atmosphere under critical flow conditions.** In formula 1 change **6** to **8** and **29** to **12.** Delete definition of P_1 under rupture members and add: **(set pressure × 1.10) + 14.7.** Delete **NOTE** at end of paragraph.

SECTION 13. RELIEF DEVICES FOR PRESSURE VESSELS

13.2.1 Add the word **internal** before the words **gross volume** at the end of the paragraph.

13.2.2 **Pressure Vessels of 10 Cubic Feet Internal Gross Volume or Over.** Under conditions specified in 13.2, a relief device system consisting of a pressure relief device in parallel with a second pressure relief device as described in paragraph 12.1.1 **shall** be provided on pressure vessels having **internal gross** volume of 10 cu. ft. or over. Each relief valve or rupture member shall have sufficient capacity to prevent the pressure in the pressure vessel from rising more than ten per cent above the setting of the pressure relief device. (See paragraph 13.8.)

13.3 In the heading add **Internal** after **with.** In the beginning of the first sentence, add **an internal** before **gross.**

13.5 All trade name refrigerants are to be changed to the numerical refrigerant designation according to ASRE Standard 34-57.

Delete Paragraph 13.7.

13.7 (renumbered paragraph) Delete **Other** in heading and first sentence. Add to end of paragraph: Rupture members installed ahead of relief valves need not be larger, but **shall** not be smaller, than the relief valve inlet. (See Paragraph 12.1.5.)

Table 6. Use refrigerant designations according to ASRE Standard 34-57. After **Monochlorodifluoromethane** add: **Monochlorotrifluoromethane (13)** under the refrigerant name and $CCIF_3$ under the heading chemical formula.

SECTION 14. FIELD TESTS

14.1 Add **and 14.1.2** to end of paragraph.

ADDITION:

14.1.2 Limited charged systems equipped with a pressure relief device, erected on the premises, **shall** be tested at a pressure not less than 1½ times the pressure setting of the relief device.

Table 6. Add: **Monochlorotrifluoromethane (Refrigerant 13) $CCIF_3$ 685° 685°**

° Critical pressure is 561 p.s.i.a. at critical temperature of 83.9° F. (See Note (a) below)

SECTION 15. INSTRUCTIONS

15.12 Pressure Gages **should** be checked for accuracy prior to test and immediately after every occasion of unusually high pressure, equal to full scale reading either by comparison with master gages or by setting the pointer as determined by a dead weight pressure gage tester.

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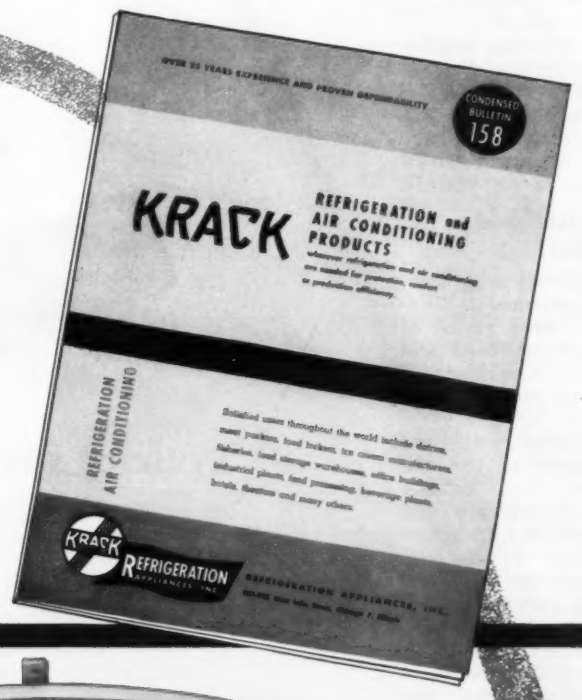

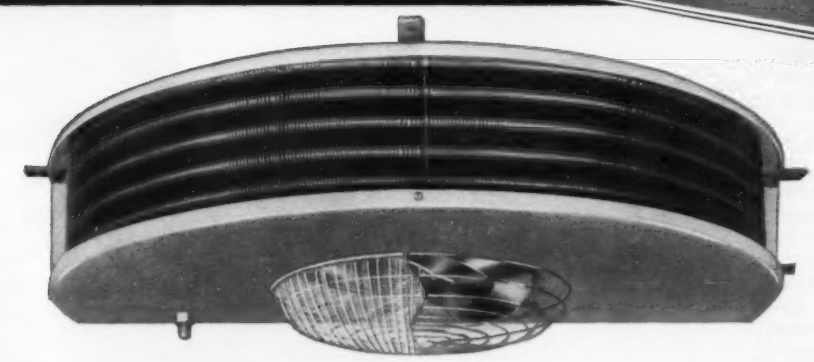

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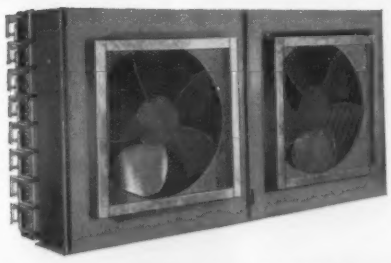

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Apprentice Training Program

Department of Labor Recognizes New Jersey RACCA-UA Program To Develop Source of Reliable, Skilled Journeymen

CLOSTER, N. J. — Recognition of the New Jersey apprenticeship training program for the trade classification of pipe fitter (refrigeration and air conditioning) by the Federal Committee on Apprenticeship in the U. S. Department of Labor was received recently by the joint apprenticeship committee representing the New Jersey Refrigeration & Air Conditioning Contractors Association and the United Association (AFL-CIO).

This recognition, according to Paul B. Hughes, coordinator for the joint apprenticeship committee, establishs the craft of refrigeration and air conditioner pipe fitter, allows for the indenture of selected petitioners, and lays down standards of training for apprentices.

Under the New Jersey apprentice training program, Hughes said, a source of reliable, skilled journeymen will be developed. New Jersey contractors have been seeking a source of skilled craftsmen since World War II.

Committee Established In Sept., 1957

The joint apprenticeship committee was established in September, 1957. Over a period of months it mapped standards and requirements for the craft of refrigeration and air conditioning pipe fitter.

On this it worked with Fred J. Neher, consultant for the U. S. Department of Labor's bureau of apprenticeship and training. Before the program was implemented, it was submitted for approval and comment to union members, contractors, manufacturers, and distributors.

The program was established and went into operation this spring. Out of 38 applicants, 18 were selected for the first class.

Apprentice Defined

The standards define an apprentice as "a person at least 18 years of age who is engaged in learning a trade, and who is covered by a written agreement, approved by the joint apprenticeship committee, which apprenticeship agreement provides reasonably continuous employment for such person or for his participation in an approved schedule of work experience through employment and at least 144 hours per year of related supplemental instruction.

"Applicants must be between the ages of 18 and 21 years and should preferably have a high school education or the equivalent. Exceptions may be made by the committee for those who are already engaged in the trade, who are war veterans, or who have unusual qualifications."

The standards further require that all apprentices be subject to a try-out probationary period not exceeding 90 days of employment. After that time he shall become indentured, provided the joint committee approves.

At the time of indenture, the apprentice shall receive a credit for the time spent on probation.

Each apprentice shall enroll and attend classes during the regular school period. Time spent in classroom shall not be considered as hours of work. The apprentice shall not be paid for attendance.

An apprentice who fails to comply with the apprenticeship agreement or standards, shall be subject to discipline by the joint committee. Discipline may consist of:

1. Postponement of advancement from one period to the next.
2. Temporary removal from the job, causing loss of employment for a day or more.
3. Cancellation or termination of the apprenticeship.

The apprentice, of course, has the right to a hearing before the committee before the disciplinary action is invoked. If he fails to appear, the disciplinary action can be invoked without a hearing.

William Emley of Jersey City, treasurer of the New Jersey Association of Refrigeration Technicians and former international director of the Refrigeration Service Engineers Society, has been named chief instructor.

Class instruction, spread over the five years of indenture, will cover elementary physics; refrigeration physics; refrigeration mathematics; refrigeration electricity; construction, operation of refrigeration system; hazard and safety rules; estimating and layout; blueprint reading and drawing; and practical shop work.

During his five years' apprenticeship, the apprentice will experience 10,000 hours of work processes under the direct supervision of a journeyman. These hours break down as follows:

Use and care of tools and equipment—800 hours.

Welding, soldering, and brazing—200 hours.

Installation and service of compression systems — 1,000 hours.

Refrigeration controls — 500 hours.

Motor controls—500 hours.

Electric motors—250 hours.

(Concluded on next page)

Certificate of Registration

FEDERAL COMMITTEE ON APPRENTICESHIP

Certificate of Recognition was received recently by joint apprenticeship committee representing the New Jersey RACCA and the UA. Certificate was issued by Federal Committee on Apprenticeship in the U. S. Department of Labor.

Remember the handy "Genetron" JUG-A-LUG of two years ago? Now General Chemical brings you another helpful tool . . .

FREE

Free between June 1 and August 1 with the purchase of any cylinder of

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from your wholesaler!

Apprenticeship--

(Concluded from preceding page)

Installation and service of absorption systems—250 hours.

Installation and service of hermetic and semi-hermetic compressors—250 hours.

Commercial refrigeration applications—1,750 hours.

Installation and service of air conditioning systems — 1,000 hours.

Installation and service of fuel burning equipment — 500 hours.

Installation and service of heating equipment—1,000 hours.

Boiler room piping, service and installation—1,000 hours.

Heating system installations (hot water and steam)—1,000 hours.

This work experience will not necessarily be in sequence or on a continuous basis, it was pointed out.

HUMID WARMTH IMPAIRS EFFICIENCY

Buxton Expects Air Conditioning To Pay for Itself Within a Few Years

SPRINGFIELD, Mass. — Installation of nearly 300 tons of Carrier air conditioning equipment was recently made at Buxton, Inc. in Agawam, making the plant completely air conditioned except for shipping and leather storage rooms.

Equipment was installed by Dee Air Conditioning, Inc. of this city.

Offices and cafeteria of the Buxton plant, opened in late 1956, were air conditioned last summer. Humid warmth in the factory impaired efficiency, a company spokesman said, so the rest of the plant, except for storage areas, was air conditioned.

"We hope the air conditioning system will pay for itself in increased efficiency within a few years," said Robert B. MacPherson, vice president and controller.

The plant-wide air conditioning system was designed by Frank Hurley, chief engineer for Dee. Bulk of the equipment is located in a specially constructed penthouse on the flat roof. The three Carrier units can simultaneously heat and cool different areas of the plant.

A 10-hp. unit has been installed for the IBM record room to control temperature and humidity there.

Hallmark Card's Multi-Art Ribbon Plant Gets 300-Ton Air Conditioning System

LAWRENCE, Kan. — Highlight of Hallmark Cards' new multi-art ribbon plant air conditioning installation here, was the lowering of 38,000 lbs. of refrigeration machinery into place during February's subzero temperature.

Designed for ribbon packaging and handwork and inspection of greeting cards, the 112,000-sq. ft. plant was to be in operation before summer on the 60-acre site about two miles from downtown Lawrence. It will be air conditioned by a 300-ton "Tonrac" hermetically-sealed centrifugal refrigeration system made by American Blower Div., American-Standard, it was pointed out.

The Tonrac machine has a capacity of cooling 1,050 g.p.m. water from 51° to 43° F. This is based on using 1,050 g.p.m. of condenser water from the cooling tower which cools that water from 95° to 85° F., it was pointed out.

Condenser of the system weighs nearly four tons, is 182¾ in. long. Evaporator weighs almost seven tons, is the same length as the condenser but about twice the diameter.

Compressor weighs 11,000 lbs. and consists of a 3,600 r.p.m. hermetically-sealed water-cooled motor with an impeller connected directly to the motor shaft. Motor is mounted on an oil-cooler assembly which supplies oil for the two motor bearings. An electrically-driven oil pump in the unit's base maintains oil pressure at all times.

Whole system was located under supervision of U. S. Engineering Co., mechanical contractor and member of Mechanical Contractors' Association of Greater Kansas City.

Inlet vanes are mounted on the intake side of the compressor, controlled by pneumatic damper motor, to change capacity of the complete unit automatically.

Position of the vanes varies in order to maintain 43° water temperature leaving the unit.

Chilled water produced by the refrigeration machine is circulated through a piping system by pumps and distributed to air conditioning units at various locations in the building, according to the installer.

Three large air conditioning units supplying main production areas, called sprayed coil dehumidifiers, spray water into the air stream and against the coils of each unit. This provides cooling and dehumidifying in summer and humidifying in winter.

Heating is provided by generating steam in two large Kewanee boilers fired by combination gas-oil burners. Steam is distributed through a piping system to steam coils in the air systems and also unit heaters in various areas in the new building.

It is also supplied to the ribbon manufacturing machines in the main production area. These machines will be supplied with glue from a separate piping system, also with compressed air and water. Glue piping system will require steam tracer piping wrapped around it to keep the glue in an easily flowable, liquid condition.

G-E Distributor Ad Wins 'Best In Southwest' Award

DALLAS — "Best in the Southwest" award for black and white trade magazine advertising was given to Texas Distributors, Inc., G-E packaged air conditioner distributor here, at the Dallas-Fort Worth Art Directors Club's first annual exhibit.

Theme of the firm's campaign was testimonials.

Dowdell-Merrill, Inc., is the agency.

CADDY-WRENCH

The all-purpose cylinder wrench and carrying tool!

It's a carrying tool! Fits bonnet hole on small "Genetron" cylinders
It's a wrench!
Fits "Genetron" cylinder valve stems and valve outlet caps—also fits stems of compressor service valves, soldering gas cylinders, etc.
Comfortable finger grips
¼" tool steel, smooth plated finish
GENETRON
SUPER-DRY REFRIGERANTS

Here's a tool you've never seen before—specially designed for the service engineer by General Chemical. It's a combination carrying tool and wrench. We call it a "Caddy-Wrench." And, like the "Jug-a-Lug" which we created for you two years ago, this is a tool that's really helpful, really useful.

Many uses! As a carrying tool, the "Caddy-Wrench" makes it easy to carry small size cylinders by the hood. *No more cuts, strains and finger injuries!* And as a wrench, it's designed to fit "Genetron" cylinder valve stems and valve outlet caps, also stems of compressor service valves, soldering gas cylinders, etc. *No more adjusting wrenches or using different tools, once you have this all-purpose cylinder wrench and carrying tool!* Made of quarter-inch solid tool steel, it's strong, sturdy, won't crack, bend or break. And the smooth plated finish makes it a pleasure to use. Be sure you get *your* "Caddy-Wrench"! *Here's the only way to get one:*

SEE YOUR WHOLESALER! When you buy any size cylinder of "Genetron" 22—*between June 1 and August 1 only*—your wholesaler will be glad to give you your "Caddy-Wrench" . . . *free!*

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Allied Chemical

AROUND THE WORLD IN 50 DAYS

"Inside Dope" by GEORGE F. TAUBENECK

(Concluded from Page 1, Col. 1)

Formosan Nationalists? Nobody admits anything.

Only casualty of the war so far was run over by a jeep.

The Smiling Chinese

After going through the inevitably exasperating Customs and Immigration redtape at the Singapore Airport, we were met by two smiling Chinese merchants—Mr. H. M. Lee of Lee & Fletcher, and Mr. S. H. Tan of the Marden Co.

Mr. Lee (who imports many makes of household and commercial refrigerators) entertained "Dope" 21 years ago in Singapore. Despite harsh treatment by the Japanese during their occupation of Malaya, Mr. Lee doesn't look a day older than he did in 1937.

Like Mr. Lee, Mr. Tan has his finger in a number of enterprises. He sells Leonard refrigerators, McCray commercial refrigerators, Hotpoint room air conditioners, and bird-dogs for the larger stuff.

His energetic son, who studied engineering at the University of Southern California, runs a tremendously busy service establishment. He and his staff provide day-and-night service for all makes of household refrigerators, room air conditioners, and commercial refrigeration.

They also recondition and rebuild all types of household and commercial refrigeration products and air conditioners for resale.

Dinner at the home of the elder Tans was a delightful experience. Both are devout Seventh Day Adventists. Prayer preceded the simple but delicious meal; and all the while we ate, a Hi-Fi set played familiar Christian hymns.

Best Air Conditioning Service In the World

"Tiny" McMichael (a six-foot-six giant of a man, who would awe even an American professional football player) runs what obviously is the most comprehensive refrigeration and air conditioning service business in the entire world.

There's nothing to compare with it in the United States or anywhere.

Mr. McMichael manages International Air Conditioning Co., Ltd. of Singapore (Carrier). He is responsible for Carrier distribution and service in Burma, Borneo, Vietnam, Cambodia, Laos, Indonesia, Sumatra, Andamans, Malayan Federation and, of course, the island of Singapore itself.

Comprising a tremendous acreage of torridly humid real estate, this territory is a lush market for air conditioning, and Mr. McMichael services it so well that it's a revelation.

In fact, he sells SERVICE above all else. Take a look at his service organization in Singapore City alone:

Fifty-eight Servicemen working around the clock seven days a week from:

Ten radio-telephone equipped trucks.

This radio-telephone equipment permits mobile service crews to contact a central dispatcher for new assignments within a few minutes after completing every job.

Since installing this system—and after rigorous technical retraining of his crews—Mr. McMichael figures that he has increased service efficiency *of each man* at least 30%.

Mind you, there's no "season" for air conditioning and refrigeration here. It's hot and humid 52 weeks a year. That puts a tremendous strain on cooling equipment.

Nevertheless, 24 hours a day, Singapore customers are accommodated within a few hours of their telephoned call for help.

Also met A. G. Caccavale, among other interesting men in Mr. McMichael's Carrier organization. This American citizen, who runs the Carrier branch in Kuala Lumpur (Federated Malay States) will return to Boston soon (after 11 years out here) to marry his boyhood sweetheart.

Room Air Conditioners—Big Business

According to D. J. King of Sime Darby & Co. Ltd. (York and Philco), room air conditioners are big business in Singapore, and getting bigger every year.

Last year 6,000 window units were sold; this year he estimates 10,000 will be installed. The price situation is good, too. Sime Darby acts as importer, wholesaler, and retailer; hence isn't muddying the waters by dealing with a multiplicity of dealers.

All residential air conditioning involves window type room air conditioners. Like Hawaii, Australia, Java (every place visited so far on this trip), residential and commercial *heating* simply doesn't exist.

No need for it. Hence "central system" residential air conditioning never is installed.

Like other firms in Singapore, Sime Darby provides 24 hours service at low cost. For $2.50 a month (on annual contract) owners of room air conditioners get service any time they call for it, plus a monthly check-up.

The World In Capsule

If it's scenery, old ruins, museums, cathedrals, famous works of art, etc., that interest you, take a Cook's Tour, or become a Movie Travelogue addict.

But if the World's *peoples,* and various types of civilizations, whet your curiosity—you'll find them all in Singapore. It is the most cosmopolitan city in the World, and has been that for at least 200 years.

Reason: Singapore is the transhipment point for all East-West commerce. Since time immemorial it has been the busiest port in the World. Anything that travels by sea (and everything does, of course) sooner or later winds up here.

East meets West in Singapore, and the twain *does* consolidate here. Chinese, Hindus, Scandinavians, Malayans, Polynesians, Africans, South and North Americans, and proper Britishers commingle pleasantly—yet all retain national identity characteristics.

Shortly after leaving a French cuisine restaurant, patronized by striped-pants diplomats and *haute couture* ladies, we paused while a Chinese funeral passed by—led by a cymbal-percussion marching band strangely reminiscent of early New Orleans days.

You'll find every type of modern and traditional architecture—and around the corner are huddled Oriental huts. Here you can go around the World in three days.

Sports Note

Tennis star Ashley Cooper (mentioned earlier in this report) is modesty itself—except when his own specialty is concerned.

He feels confident that he can win every amateur tennis championship this year — including the Wimbledon and Forest Hills titles, and again lead Australia to another Davis Cup victory.

And he probably will!

However, he is not optimistic about Australia's chances in the 1959 "go." Michigan's Barry McKay, he believes, may become the finest tennister of all by that time.

Also, he feels that American sportscribes are underrating the potentialities of several U. S. "junior" tryers he played against in various Stateside tournaments last year.

Clinches: Cooper himself, like Mal Anderson, and other top Australian amateurs, may not be available next year. Cooper has a girl-friend back in Melbourne and, like married Anderson, will not leave her again for the rigors of a five-month international tour.

ALL STANDARD D-H "PERMA-FAN"

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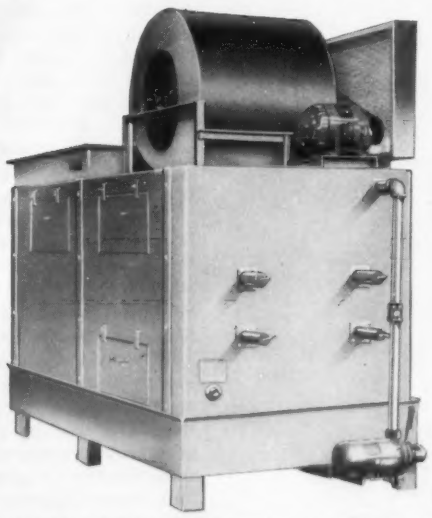

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SAVE MONEY, time and effort by ordering from our new *Dependabook,* the most complete catalog of all. 160 pages. Over 10,000 items carried in stock. *Wholesale only.* Your orders filled really fast by mail, or picked up at one of six big warehouses.

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FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG WAREHOUSES

World's Largest

222 Package Units Give Tennants Individual Space Control In Huge Homefurnishings Mart

DALLAS—World's largest installation of ceiling suspended package units—222 of them totaling 1,190 tons—provide year-round air conditioning for the huge new Dallas Homefurnishings Mart here.

This two-story windowless building located in the Trinity industrial district was built in two sections. As now completed the structure is 600 ft. long by 350 ft. wide.

Use of so many package units instead of a central system for such a large installation raises some obvious questions, but Lamar Griffin, executive of Texas Distributors, Inc., who sold the equipment and assisted in the engineering, cites numerous reasons that convinced Trammell Crow, owner and developer of the mart. Mechanical contractor was Beard Plumbing Co. of Dallas.

Flexibility Needed

A major consideration was the flexibility of operation this setup gives the many tenants who occupy the mart, for the usage varies greatly, Griffin explains.

During major markets, which are staged twice a year, all the showrooms are staffed and the building is crowded with buyers. These markets run for a week in winter and a week in summer. During the rest of the year there are two market days a month.

There are a few tenants who keep their showrooms staffed all the time, but the majority do so only during market periods. With this installation each tenant can operate his air conditioning system when he wants to, and individual controls for each space let each tenant select the conditions he wants.

Another important factor is that the utilities are metered separately to each tenant. With a central system operating costs would have to be pro-rated among the tenants, which could lead to problems. Here, however, each tenant pays only for the cost of operating his individual system, and he has complete control over when and how it operates.

No Resident Engineer

Other advantages claimed for this installation, Griffin says, include low initial cost, five-year protection plan, low operating and maintenance cost, elimination of need for resident engineer, very little floor space required for air conditioning equipment, and no possibility of a complete shut-down of the entire system such as could happen in the event of a central plant failure.

The problem of a resident engineer is solved by Texas Distributors furnishing two men who are on duty constantly during the major market weeks to keep all the units, cooling tower, pumps, etc., operating.

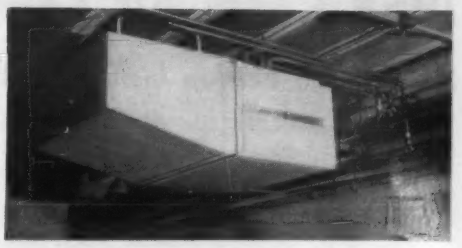
General Electric package units are used throughout the building. There are 55 FCW-30 units (3 tons), 91 FCW-50's (5 tons), and 76 FCW-75's (7½ tons). Each unit is equipped with a hot water coil for winter heating. All are suspended from the pre-cast concrete ceilings on vibration eliminators.

There's a unit approximately every 25 ft., but exact location and size of the units vary with the space to be conditioned. A total of 190 units are installed in tenants' space. The other 32 units handle the load in the corridors.

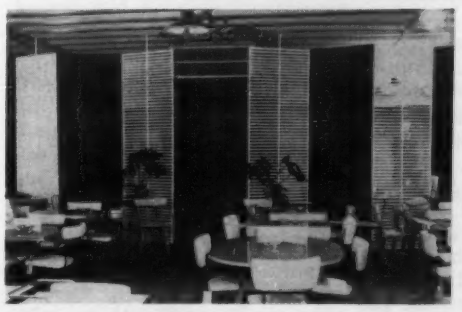
All the conditioners are water-cooled, being piped to a Marley induced draft cooling tower on the roof. Four 60-hp. Ingersoll-Rand pumps handle the condenser water, and two more 60-hp. pumps take care of hot water circulation for winter heating.

Piping to the individual conditioners is concealed in a chase which also serves as the fresh air supply duct to the units. Eight blowers on the roof force in fresh air at a rate of 50,000 c.f.m., the outside air being filtered and tempered before delivery to the units.

Grilles above the doors in each occupied space of the mart let air escape to the corridors from which it is exhausted by three blowers on the roof above.



SUSPENDED from ceiling, 222 G-E package units totaling 1,190 tons cool huge Dallas Homefurnishings mart, providing individual control of space temperature for each tenant.



CEILING units in mart take up no valuable floor space, blend with decor.

Schnacke Thermatrol COOLING TOWERS

At a NEW LOW PRICE!

PCT FEATURES

- Blow through dry fan & Motor
- Simplified, compact, Symmetrical Construction
- Easy access for Service
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Models PCT — for outdoor installation

Propeller type - blow through design assures dry fan and motor - plus more symmetrical appearance and increased efficiency. Excellent air delivery requires less horsepower. Quality, time tested design and construction. Attractive gray vinyl coating over rust proof primer assures corrosion resistance.

Models SCT—with centrifugal fans also available for duct installations.

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Made by Experts in the Refrigeration & Air Conditioning Field

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Break the BARRIER and close the sale

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A service offered through subsidiaries of Commercial Credit Company, Baltimore . . . Capital and Surplus over $200,000,000 . . . offices in principal cities of the United States and Canada

Most of your prospects need their cash reserves and usual lines of credit for current operations. Break through this financial barrier. Make it easier for the prospect to sign on the dotted line by including financing arrangements. COMMERCIAL CREDIT'S Refrigeration Plan is backed by many years' experience in your industry—experience in handling financing for thousands of commercial refrigeration and air conditioning installations.

Let us show you how COMMERCIAL CREDIT experience and know-how saves you time and money . . . and helps you close sales with less delay. Call the nearest COMMERCIAL CREDIT office or write COMMERCIAL CREDIT CORPORATION, 300 St. Paul Place, Baltimore 2, Md.

Make your proposals complete . . . include financing with COMMERCIAL CREDIT PLAN

1958 Room Air Conditioner Ratings *(Revised)*

Second ARI Edition Includes New, Revised B.t.u.h. Ratings

WASHINGTON, D. C. — The second edition of its 1958 list of room air conditioner ratings was issued recently by Air-Conditioning & Refrigeration Institute, based on the reports of 31 manufacturers and merchandising companies.

The ratings are stated in terms of British thermal units per hour (B.t.u.h.) of cooling capacity, as established in accordance with ARI Standard 110-58.

In the new booklet, 15 manufacturers have added to their model listings or revised the ratings of some models as published in the April 4 edition, and the ratings of nine remain the same as those published earlier for all models. In addition, seven manufacturers of private brand merchandisers are listed for the first time in the second edition.

As in the first edition, the revised list makes no reference to tons or horsepower of compressor motors, terms which formerly were used to express capacity, but which have been discarded as non-applicable, ARI pointed out. The list also includes the total watts input, nameplate volts and amperes, cycle and phase of motors, and the number of the refrigerant used.

Ratings of models made by Admiral Corp., Amana Refrigeration, Inc., Airtemp Div. of Chrysler Corp., The Mathes Co., Inc., Mitchell Div. of Cory Corp., Quiet-Heet Mfg. Corp., The O. A. Sutton Corp., Westinghouse Electric Corp., and Whirlpool Corp. remain the same as in the April 4 printing. Other makers listed in the first edition have changed the ratings on one or more of their models or have listed additional models.

Listed for the first time in the new edition are the models of Aimcee Wholesale Corp., Auto-Lec Stores, Inc., Gamble-Skogmo, Inc., R. H. Macy, The May Co., Olympic Radio & TV, and White Stores, Inc.

As reported in the May 12 issue of the NEWS, the ARI Room Air Conditioner Section plans to strengthen the program of published ratings further in 1959, under the certification program adopted at a meeting in Hot Springs, Va., early in May, to become effective Oct. 1, 1958.

Room Unit Ratings

Model No.	Rated Cooling Capacity Btu/Hr.	Total Elec. Input Watts	Nameplate Electrical Data Volts	Amps.	Cycles/ Phase	Refrigerant No.
ADMIRAL CORPORATION						
7SJ7	4,200	800	115	7.5	60/1	12
10057	6,800	920	115	7.5	60/1	22
10017	6,800	920	115	7.5	60/1	22
10012	8,200	1300	115	12.0	60/1	22
10023	8,200	1320	230	7.0	60/1	22
10023	8,200	1320	230	7.0	60/1	22
10023A	10,000	1480	230	7.5	60/1	22
15012	10,500	1460	115	12.0	60/1	22
15012	10,500	1460	115	12.0	60/1	22
15023	13,500	2100	230	11.2	60/1	22
20023	16,000	2350	230	12.0	60/1	22
20023	15,500	2500	230	12.0	60/1	22
AIMCEE WHOLESALE CORPORATION (AMC BRAND)						
ADV-38	7,000	1200	230	7.5	60/1	22
ADV-138	8,000	1300	230	7.5	60/1	22
12238	8,000	1300	230	7.5	60/1	22
11238	7,000	1300	115	12.0	60/1	22
17338	7,000	920	115	7.5	60/1	22
ADV-148	10,700	1500	230	8.0	60/1	22
ADV-1548	12,300	2100	230	12.0	60/1	22
12348	10,700	1500	230	8.0	60/1	22
11248	10,300	1350	115	12.0	60/1	22
151248	10,500	1350	115	12.0	60/1	22
152348	12,300	2100	230	12.0	60/1	22
22348	16,300	2550	230	12.0	60/1	22
AIRTEMP DIVISION CHRYSLER CORPORATION						
1675-18-39	6,500	860	115	7.5	60/1	22
1675-20-39	8,000	1230	115	11.6	60/1	22
1675-20-40	8,000	1230	230	5.8	60/1	22
1600-21-39	9,000	1240	115	12.0	60/1	22
1600-22-39	8,200	1355	115	12.0	60/1	22
1600-24-40	9,600	1340	230	7.0	60/1	22
1600-26-39	8,000	1355	115	12.0	60/1	22
1615-3-142	13,800	2050	230/208	10.7	60/1	22
1620-3-142	16,000	2320	230/208	12.0	60/1	22
1750-2-39	5,000	960	115	7.5	60/1	12
1775-5-39	6,800	1140	115	11.9	60/1	22
1775-6-39	5,600	885	115	7.5	60/1	22
1775-7-39	5,600	885	115	7.5	60/1	22
1700-1-39	7,900	1325	115	12.0	60/1	22
1850-0-39	5,300	790	115	7.5	60/1	12
1875-0-39	7,500	1180	115	11.9	60/1	22
1875-0-40	7,500	1180	230	6.5	60/1	22
1800-0-40	9,000	1340	230	7.9	60/1	22
1800-0-42	9,000	1340	208	8.8	60/1	22
AMANA REFRIGERATION, INCORPORATED						
100LC2N	6,800	900	115	7.5	60/1	22
100LCS2N	6,800	900	115	7.5	60/1	22
100C2N-1	8,500	1200	115	12.0	60/1	22
100C3N-1	8,500	1200	230	6.0	60/1	22
75LA2N	6,900	800	115	7.5	60/1	22
100LA2N	7,900	850	115	7.5	60/1	22
100A2N	9,000	1200	115	11.0	60/1	22
100A3N	10,300	1500	230	8.0	60/1	22
130A2N	12,000	1500	115	12.0	60/1	22
150AS3N	12,200	2000	230	9.5	60/1	22
150A3N	14,100	2000	230	9.5	60/1	22
200A3N	16,000	2300	230	11.5	60/1	22
75LF2N	6,600	850	115	7.5	60/1	22
100LF2N	7,100	870	115	7.5	60/1	22
100F3N	10,000	1600	230	7.5	60/1	22
75LD2N	6,000	850	115	7.5	60/1	22
100D2N	8,400	1300	115	12.0	60/1	22
150D3N	13,100	2000	230	9.5	60/1	22
200D3N	15,600	2400	230	11.5	60/1	22
AUTO-LEC STORES, INC.						
29-8110	7,000	1300	230	7.5	60/1	22
29-8111	7,000	920	115	7.5	60/1	22
29-8112	8,000	1300	230	7.5	60/1	22
29-8113	10,700	1500	230	8.0	60/1	22
29-8115	12,300	2100	230	12.0	60/1	22
29-8120	16,300	2550	230	12.0	60/1	22
CARRIER CORPORATION						
51AS4-230	9,600	1580	230	8.0	60/1	12
51AS4-115	7,300	1000	115	7.5	60/1	500
51AC4-208	9,600	1600	208	10.0	60/1	12
51AC4-230	9,600	1550	230	8.0	60/1	12
51AC4-115	7,300	1000	115	7.5	60/1	500
51AS4-230Y	9,600	1550	230	8.0	60/1	12
51AC4-208Y	9,600	1600	230	10.0	60/1	12
51AC4-230Y	9,600	1550	230	8.0	60/1	12
51AC4-115Y	7,300	1000	115	7.5	60/1	500
51AS4-179	9,600	1550	230	7.5	50/1	12
51AS3-179	7,500	1210	230	5.9	50/1	12
51AS3-115A	7,500	1190	115	11.2	60/1	12
51AS3-230A	7,500	1175	230	5.9	60/1	12
51AS3-208A	7,500	1190	208	6.7	60/1	12
51AS4-115A	9,600	1470	115	12.0	60/1	500
51AS4-230A	9,600	1475	230	7.5	60/1	12
51AS4-208A	9,600	1520	208	9.6	60/1	12
51AS5-230	13,400	2520	230	11.2	60/1	500
51AS5-208	13,400	2520	208	12.0	60/1	500
51AS6-230	16,000	2540	230	12.0	60/1	22
51AS6-208	16,000	2540	208	12.0	60/1	22
51AS5-208Y	13,400	2520	208	12.0	60/1	500
51AS5-230Y	13,400	2520	230	11.2	60/1	500
51AS6-208Y	16,000	2540	208	12.0	60/1	22
51AS6-230Y	16,000	2540	230	12.0	60/1	22
51AS5-179	14,500	2520	230	12.0	50/1	22
51K3-115	7,500	1210	115	11.2	60/1	12
51K4-230	9,600	1550	230	7.5	60/1	12
51W3-115	8,000	1210	115	11.2	60/1	12
51W3-230	8,000	1210	230	5.75	60/1	12
51W3-208	8,000	1210	208	7.0	60/1	12
51W4-230	9,700	1590	230	8.0	60/1	12
51W4-208	9,700	1590	208	8.9	60/1	12
51W4-179	9,700	1590	230	8.0	50/1	12
51W4-115A	8,000	1210	115	11.2	60/1	12
51W4-230A	8,000	1210	230	5.75	60/1	12
51W4-208A	8,000	1210	208	7.0	60/1	12
51W4-230B	9,700	1590	230	8.0	60/1	12
51W4-208B	9,700	1590	208	8.9	60/1	12
51W4-208BY	9,700	1590	208	8.9	60/1	12
51AL4-230	9,800	1570	230	7.5	60/1	12
51AL5-230	13,400	2520	230	11.2	60/1	500
51W4-230BY	9,700	1590	230	8.0	60/1	12
51AC5-230	14,400	2400	230	11.1	60/1	500
51AC5-230Y	14,400	2400	230	11.1	60/1	500
51AP2-115	4,100	810	115	7.5	60/1	12
51AP2-115A	4,100	810	115	7.5	60/1	12
COOLERATOR DIVISION McGRAW-EDISON COMPANY (COOLERATOR)						
S10A17	7,300	870	115	7.5	60/1	22
S10A1	7,300	1160	115	12.0	60/1	22
S10A2	8,600	1210	230	6.0	60/1	22
S10A8	8,600	1210	208	6.0	60/1	22
S15A2	12,400	2050	230	10.0	60/1	22
S15A8	12,400	2050	208	10.0	60/1	22
S20A2	14,800	1960	230	11.0	60/1	22
C10A17	7,600	900	115	7.5	60/1	22
C10A2	10,200	1510	230	8.0	60/1	22
C10A8	10,300	1510	208	8.0	60/1	22
C15A1	11,100	1400	115	12.0	60/1	22
C15A2	13,300	2070	230	10.0	60/1	22
C20A2	16,700	2320	230	11.0	60/1	22
C20A8	16,700	2320	208	11.0	60/1	22
C25A2	19,100	2640	230	12.0	60/1	22
C25A8	19,100	2640	208	12.0	60/1	22
CP5A17	4,300	750	115	7.5	60/1	12
CR10A2NY	9,300	1510	230	8.0	60/1	22
CR10A8NY	9,300	1510	208	8.0	60/1	22
CR15A2	13,200	2070	230	10.0	60/1	22
C10A8NY	9,200	1510	208	8.0	60/1	22
COOLERATOR DIVISION McGRAW-EDISON COMPANY (MANNING BOWMAN)						
MD-100A17	7,300	870	115	7.5	60/1	22
MD-100A1	7,300	1160	115	12.0	60/1	22
MD-100A2	8,600	1210	230	6.0	60/1	22
MD-100A8	8,600	1210	208	6.0	60/1	22
MD-150A2	12,400	2050	230	10.0	60/1	22
MD-150A8	12,400	2050	208	10.0	60/1	22
MD-200A2	14,800	1960	230	11.0	60/1	22
MI100A17	7,600	900	115	7.5	60/1	22
MI100A2	10,200	1510	230	8.0	60/1	22
MI100A8	10,200	1510	208	8.0	60/1	22
MI130A1	11,100	1400	115	12.0	60/1	22
MI150A2	13,300	2070	230	10.0	60/1	22
MI200A2	16,700	2320	230	11.0	60/1	22
MI200A8	16,700	2320	208	11.0	60/1	22
MI230A2	19,100	2640	230	12.0	60/1	22
MI250A8	19,100	2640	208	12.0	60/1	22
MIP50A17	4,200	750	115	7.5	60/1	12
MIR100A2NY	9,200	1510	230	8.0	60/1	22
MIR100A8NY	9,200	1510	208	8.0	60/1	22
MIR150A2	13,200	2070	230	10.0	60/1	22
MI100A8NY	9,200	1510	208	8.0	60/1	22
EMERSON ELECTRIC MFG. CO.						
ACB-10-15LT	7,000	920	115	7.5	60/1	22
ACB-20-30D	16,000	2550	230	12.0	60/1	22
ACB-13-15P	3,150	630	115	7.1	60/1	12
ACB-15-30T	10,200	2070	230	12.0	60/1	22
ACB-20-30T	18,000	2670	230	12.0	60/1	33
ACB-10-15AC	9,000	1380	115	12.0	60/1	22
ACB-1015ADR	10,300	1250	115	12.0	60/1	22
ACB-1015AD	10,300	1250	115	12.0	60/1	22
ACB-20-30TR	18,000	2670	230	12.0	60/1	22

(Editor's note: In order to keep each manufacturer's listing together without breaking to another column several listings appear out of alphabetic order.)

Model No.	Rated Cooling Capacity Btu/Hr.	Total Elec. Input Watts	Nameplate Electrical Data Volts	Amps.	Cycles/ Phase	Refrigerant No.
PRIEDRICH REFRIGERATORS, INC.						
8W7515	9,000	1235	115	11.7	60/1	12
8W10025	11,700	1560	230	8.0	60/1	22
8W15025	17,200	2100	230	9.7	60/1	22
8W20025	22,100	2660	230	12.5	60/1	22
FRIGIDAIRE DIVISION GENERAL MOTORS CORPORATION						
AS-100-82	8,600	1370	230	5.6	60/1	22
AS-100-88	8,600	1370	208	6.7	60/1	22
AD-100M-81	7,800	1180	115	9.9	60/1	22
AI-100-82	10,000	1380	230	5.8	60/1	12
AI-100-88	10,000	1360	208	7.1	60/1	12
AI-150-82	13,600	2190	230	10.0	60/1	22
AI-150-88	13,600	2100	208	10.8	60/1	22
AI-200-82	16,500	2400	230	12.0	60/1	22
AI-200-88	16,500	2350	208	13.0	60/1	22
A50-57	4,500	760	115	7.4	60/1	22
AE75-5711	8,200	1130	115	10.4	60/1	22
AE75-5721	8,200	1130	230	5.5	60/1	22
AE75-5781	8,200	1130	208	6.0	60/1	22
AE75S-5711	6,500	880	115	7.5	60/1	12
AD-100L-81	6,500	905	115	7.5	60/1	12
AD-100-825	7,600	1000	220	5.9	50/1	22
AI-100-825	9,500	1350	220	7.2	50/1	12
AI-150-825	12,300	2190	220	12.0	50/1	22
GAMBLE-SKOGMO, INC.						
44-110	7,000	1300	115	12.0	60/1	22
44-111	7,000	920	115	7.5	60/1	22
44-112	8,000	1250	115	12.0	60/1	22
44-113	12,300	2100	230	12.0	60/1	22
44-114	16,300	2550	230	12.0	60/1	22
GENERAL ELECTRIC COMPANY						
R446R-16	6,000	900	115	7.5	60/1	22
R462R-16	9,000	1400	115	12.0	60/1	22
R473R-26	10,000	1575	230	6.8	60/1	22
R473R-26	10,300	1480	230	6.8	60/1	22
R681R-26	14,500	2100	230	9.5	60/1	22
R460R-26	9,300	1550	230	7.8	60/1	22
R463R-16	8,600	1300	115	12.0	60/1	22
R31P-16	5,600	800	115	7.5	60/1	12
R41P-16	6,700	900	115	7.5	60/1	22
R42P-16	6,700	900	115	7.5	60/1	22
R51P-16	7,700	1290	115	12.0	60/1	22
R51P-26	7,700	1290	230	6.0	60/1	22
R52P-16	7,800	1150	115	11.0	60/1	22
R52P-26	7,800	1150	230	5.5	60/1	22
R60P-26	9,300	1350	230	6.3	60/1	22
R61P-16	9,400	1300	115	12.0	60/1	22
R62P-16	9,400	1325	115	12.0	60/1	22
R71P-26	10,500	1480	230	6.8	60/1	22
R72P-26	10,300	1480	230	6.8	60/1	22
R101P-26	14,000	2150	230	10.0	60/1	22
RB32P-16	5,600	800	115	7.5	60/1	12
RB52P-16	7,800	1150	115	11.0	60/1	22
RB52P-26	7,800	1150	230	5.5	60/1	22
RB72P-26	10,500	1480	230	6.8	60/1	22
GIBSON REFRIGERATOR COMPANY DIVISION OF HUPP CORPORATION						
1-5811	10,300	1250	115	12.0	60/1	22
1-5812	10,700	1500	230	8.0	60/1	22
1-5851	10,500	1350	115	12.0	60/1	22
1-5842	12,000	2000	230	12.0	60/1	22
1-5852	14,500	2150	230	12.0	60/1	22
1-5822	16,300	2550	230	12.0	60/1	22
1-5832	16,300	2550	230	12.0	60/1	22
1-6851	10,300	1400	115	12.0	60/1	22
1-6852	12,500	2000	230	12.0	60/1	22
HOTPOINT COMPANY						
17BAMP100	7,000	1030	115	7.5	60/1	22
11BAMP100	8,000	1300	115	12.0	60/1	22
12BAMP100	8,000	1375	230	6.3	60/1	22
11BADL150	11,000	1,600	115	12.0	60/1	22
12BAML200	14,500	2440	230	11.0	60/1	22
12BADL200	16,000	2800	230	12.0	60/1	22
FEDDERS-QUIGAN CORPORATION						
79DS-2	6,000	850	115	7.5	60/1	22
79CS-2	7,000	885	115	7.5	60/1	22
79D-2	7,800	1180	115	12.0	60/1	22
711DS-2	8,500	1240	115	11.1	60/1	22
711DSA-2	8,500	1260	115	12.0	60/1	22
711DSH-2	8,500	1260	115	12.0	60/1	22
711CSE-2	9,100	1130	115	11.4	60/1	22
711C-3	9,700	1620	230	8.0	60/1	22
711CH-3	9,700	1550	230	8.0	60/1	22
712C-3	10,600	1620	230	8.4	60/1	22
716C-3	12,800	2010	230	9.9	60/1	22
720C-3	16,000	2320	230	11.1	60/1	22
720T-3	16,000	2320	230	11.2	60/1	22
76CW-2	5,000	930	115	9.6	60/1	22
79CW-2	7,800	1230	115	12.0	60/1	22
79AW-2	6,000	890	115	7.5	60/1	22
711AW-2	8,500	1320	115	12.0	60/1	22
711AW-3	9,700	1640	230	8.0	60/1	22
711AW-5	9,700	1640	208	8.7	60/1	22
711BW-2	9,000	1390	115	12.0	60/1	22
711BW-3	9,700	1690	230	7.4	60/1	22
711BW-5	9,700	1590	208	8.8	60/1	22
716BW-3	12,800	2129	230	10.6	60/1	22
720BT-3	15,600	2440	230	11.0	60/1	22
816D-3	12,300	2060	230	10.3	60/1	22
811SH-2	8,000	950	115	7.5	60/1	22
811DH-3	9,200	1580	230	8.5	60/1	22
816DH-3	12,000	2200	230	10.5	60/1	22
811D-5	9,500	1520	208	8.5	60/1	22
817C-3	14,400	2090	230	10.4	60/1	22
817C-5	14,300	1910	208	10.5	60/1	22
821C-3	15,700	2510	230	12.0	60/1	22
816CS-2	11,300	1430	115	11.6	60/1	22
822C-3	16,600	2650	230	12.7	60/1	22
812CS-3	12,500	1700	230	8.5	60/1	22
816SH-2	11,000	1420	115	11.6	60/1	22
811S-2	8,000	940	115	7.5	60/1	22
821C-5	15,900	2480	208	12.0	60/1	22
816D-5	12,000	2000	208	11.1	60/1	22
811DH-5	9,100	1610	208	8.9	60/1	22
11AW-5A	9,000	1600	208	9.0	60/1	22
820D-5	13,000	2180	208	10.7	60/1	22
820DH-5	12,300	2320	208	10.7	60/1	22
816DH-5	12,000	2000	208	10.6	60/1	22
89DS-2	6,000	870	115	7.5	60/1	22
9AW-2A	6,000	895	115	7.5	60/1	22
11AW-3A	8,000	1220	115	7.5	60/1	22
11AW-3A	9,000	1720	230	9.2	60/1	22
11BW-3A	9,700	1700	230	9.2	60/1	22
16BW-3A	12,000	2200	230	11.0	60/1	22
811D-3	9,700	1660	230	8.6	60/1	22
820D-3	13,200	2210	230	10.3	60/1	22
820DH-3	12,500	2420	230	10.7	60/1	22
812C-3	11,500	1660	230	8.4	60/1	22
812FS-3	11,000	1650	230	14.9	60/1	22
817FS-3	12,500	2010	230	15.8	60/1	22
812FS-5	10,800	1560	208	13.0	60/1	22
817FS-5	12,300	1900	208	15.0	60/1	22
812C-5	11,300	1525	208	8.5	60/1	22
812S5-2	8,800	920	115	7.5	60/1	22
811DS-2	8,000	1220	115	11.5	60/1	22
11BW-2A	8,500	1330	115	12.0	60/1	22
16BWH-3A	12,000	2170	230	16.0	60/1	22
16BWH-5A	12,000	2100	208	15.4	60/1	22
11AWH-3A	9,000	1580	230	15.0	60/1	22
11AWH-5A	9,000	1560	208	15.0	60/1	22
11BW-5A	9,000	1680	208	9.0	60/1	22
811DX-6	9,100	1575	230	9.7	50/1	22
86M-2	4,500	815	115	7.5	60/1	12
86CM-2	4,500	845	115	7.5	60/1	12
810MS-2	7,000	910	115	7.5	60/1	22
810M-2	8,000	1250	115	12.0	60/1	22
810M-3	8,000	1210	230	6.1	60/1	22
KELVINATOR DIVISION AMERICAN MOTORS CORP.						
RH 1041	8,000	1330	115	12.0	60/1	22
RH 1041 H	7,800	1330	115	12.0	60/1	22
RH 1042	8,000	1330	230	6.2	60/1	22
RH 1061	7,500	950	115	7.5	60/1	22
RH 1081	9,800	1380	115	12.0	60/1	22
RH 1081 H	9,600	1380	115	12.0	60/1	22
RH 1082	10,500	1475	230	7.2	60/1	22
RH 1082 H	10,300	1475	230	7.2	60/1	22
RH 1581	11,000	1470	115	12.0	60/1	22
RH 1581 H	10,800	1470	115	12.0	60/1	22
RH 1582	13,200	2050	230	8.6	60/1	22
RH 1582 H	12,900	2050	230	8.6	60/1	22
RH 2082	14,400	2770	230	11.3	60/1	22
RH 2082 H	14,200	2770	230	11.3	60/1	22
RH 2092	17,000	2700	230	12.2	60/1	22
RH 2092 H	16,700	2700	230	12.2	60/1	22
RH 1071 C	6,400	920	115	7.8	60/1	22
RH 1041 M	7,500	1300	115	11.6	60/1	22
RH 1042 M	7,500	1300	230	6.0	60/1	22
RH 1043 M	7,500	1300	208	6.7	60/1	22
RH 1081 M	9,300	1380	115	12.0	60/1	22
RH 1082 M	10,000	1500	230	7.2	60/1	22
RH 1083 M	10,000	1500	208	8.1	60/1	22
RH 1582 M	12,400	2130	230	10.0	60/1	22
RH 1583 M	12,400	2130	208	11.1	60/1	22
RH 2082 M	13,300	2875	230	12.9	60/1	22
RH 2083 M	13,300	2875	208	14.2	60/1	22
RH 1041 X	7,500	1300	115	11.6	60/1	22
RH 1042 X	7,500	1300	230	6.0	60/1	22
RH 1043 X	7,500	1300	208	6.7	60/1	22
RH 1081 MX	9,200	1380	115	12.0	60/1	22
RH 1082 X	10,000	1500	230	7.2	60/1	22
RH 1083 X	10,000	1500	208	8.1	60/1	22
RH 1582 X	12,400	2130	230	10.0	60/1	22
RH 1583 X	12,400	2150	208	11.1	60/1	22
RH 2082 X	13,300	2875	230	12.9	60/1	22
RH 2083 X	13,300	2875	208	14.2	60/1	22
R. H. MACY						
PD-1H	3,100	630	115	6.9	60/1	12
AC-4S	6,800	930	115	7.5	60/1	22
AC-13S	8,800	1450	115	12.0	60/1	22
BC-5S	10,500	1450	115	12.0	60/1	22
BC-8S	14,800	2150	230	12.0	60/1	22
BC-10S	18,100	2800	230	12.0	60/1	22
THE MATHES COMPANY						
90S	9,000	1480	115	11.9	60/1	22
106S	10,200	1820	230	7.9	60/1	22
90D	9,000	1480	115	11.9	60/1	22
106D	10,200	1820	230	7.9	60/1	22
135D	13,300	2200	230	9.7	60/1	22
165D	17,000	2460	230	11.6	60/1	22
90

Revised Room Unit Ratings--

Model No.	Rated Cooling Capacity Btu/Hr.	Total Elec. Input Watts	Nameplate Electrical Data Volts	Amps.	Cycles/ Phase	Refrigerant No.
MITCHELL MANUFACTURING COMPANY DIVISION OF CORY CORPORATION						
F17H-1	6,800	930	115	7.5	60/1	22
B10H-2	11,700	1700	230	7.5	60/1	22
B20H-2	18,100	2650	230	12.0	60/1	22
BA20H-2	15,500	2510	230	12.0	60/1	22
A12H-1	8,300	1350	115	12.0	60/1	22
A12H-2	8,300	1245	230	6.8	60/1	22
A15H-2	11,400	2000	230	12.0	60/1	22
A20H-2	14,800	2350	230	12.0	60/1	22
A37H-1	5,800	740	115	7.5	60/1	22
PO5H-1	3,100	630	115	6.9	60/1	22
OLYMPIC RADIO & TELEVISION						
OW 775D	6,200	900	115	7.5	60/1	22
OW 7100D	8,200	1200	115	12.0	60/1	22
OW 6100D	9,500	1350	230	7.0	60/1	22
OW 7200D	1,600	2600	230	12.0	60/1	22
OT 785C	6,400	800	115	7.5	60/1	22
OT 7110C	8,200	1250	115	12.0	60/1	22
OW 8100S	7,500	1200	230	7.5	60/1	22
OW 8100D	7,000	920	115	7.5	60/1	22
OW 8200D	16,300	2550	230	12.0	60/1	22
PHILCO CORPORATION						
A983-2	5,600	900	115	7.5	60/1	22
A984-2	6,600	1230	115	12.0	60/1	22
A984-11	6,600	1230	230	7.5	60/1	22
A1081-23	8,200	1200	230/208	6.7	60/1	22
A1082-2	8,400	1200	115	12.0	60/1	22
AF1082-2	8,400	1200	115	12.0	60/1	22
A1082-23	8,400	1200	230/208	6.7	60/1	22
AF1082-23	8,400	1200	230/208	6.7	60/1	22
A1086-2	8,200	1200	115	12.0	60/1	22
AF1086-2	8,200	1200	115	12.0	60/1	22
A1086-23	8,200	1200	230/208	6.7	60/1	22
AF1086-23	8,200	1200	230/208	6.7	60/1	22
A1083-2	8,000	960	115	7.5	60/1	22
A1283-2	10,100	1290	115	12.0	60/1	22
A1282-11	12,400	1670	230	7.5	60/1	22
A1382-11	14,000	2060	230	10.0	60/1	22
A2082-11	15,500	2475	230	12.0	60/1	22
A873-2	6,800	850	115	7.5	60/1	22
A882-2	5,300	880	115	7.5	60/1	22
A1072-2	8,000	1350	115	12.0	60/1	22
A1072-11	10,100	1540	230	7.5	60/1	22
A1072-23	10,100	1540	230/208	7.5/8.5	60/1	22
A1074-2	8,000	1350	115	12.0	60/1	22
A1077-2	7,880	1350	115	12.0	60/1	22
QUIET-HEET MANUFACTURING CORPORATION Subsidiary of Emerson Radio and Phonograph Corporation (QUIET KOOL)						
7P7	6,250	870	115	7.5	60/1	22
7P1	7,800	1250	115	12.0	60/1	22
7P2 7P8	7,800	1250	230/208	7.5	60/1	22
9P1	8,400	1300	115	12.0	60/1	22
9P2 9P8	9,400	1700	230/208	10.0	60/1	22
E10G2	10,500	1540	230	10.0	60/1	22
E15G2	13,500	1965	230	12.0	60/1	22
E20G2	16,000	2460	230	12.0	60/1	22
500	3,650	800	115	7.5	60/1	12
550	3,650	800	115	7.5	60/1	12
REMINGTON CORPORATION						
WS7F-2	6,200	1160	115	11.8	60/1	22
WS9F-2	8,200	1280	115	12.0	60/1	22
WD9F-43	8,200	1280	230	6.1	60/1	22
SD9A-2	8,200	1230	115	12.0	60/1	22
WM9A-2	8,000	1300	115	12.5	60/1	22
WM9A-3	8,000	1300	230	6.25	60/1	22
WA9G-2	8,400	1260	115	12.0	60/1	22
WA9G-3	8,400	1250	230	6.1	60/1	22
WD13G-3	13,700	2150	230	11.0	60/1	22
WD20G-3	17,500	2750	230	12.8	60/1	22
WA15G-3	13,700	2150	230	11.0	60/1	22
WA20G-3	17,500	2750	230	12.8	60/1	22
WD12G-4	9,900	1310	220	7.0	50/1	22
WD17G-4	14,400	2240	230	10.1	50/1	22
CW10A62	11,300	960	115	9.4	60/1	22
CW10A43	11,300	960	230	4.7	60/1	22
CW15A43	17,400	1570	230	7.4	60/1	22
SEARS, ROEBUCK AND COMPANY (COLDSPOT)						
87134	4,200	850	115	7.5	60/1	22
76334	5,800	875	115	7.5	60/1	22
76310	8,000	1375	115	12.0	60/1	22
77413	12,000	2000	230	9.8	60/1	22
77215	14,000	1800	230	10.2	60/1	22
77430	14,000	2300	230	12.0	60/1	22
77230	15,500	2500	230	12.0	60/1	22
77020	17,000	2600	230	12.0	60/1	22
5855100	8,300	1100	115	12.0	60/1	22
5855101	8,300	1100	115	12.0	60/1	22
5854100	9,700	1500	230	7.8	60/1	22
5854101	9,700	1500	230	7.8	60/1	22
5854150	12,700	1925	230	9.8	60/1	22
5854151	12,700	1925	230	9.8	60/1	22
5857100	8,600	1260	115	12.0	60/1	22
5857101	8,600	1260	115	12.0	60/1	22
5856100	8,600	1280	230	7.5	60/1	22
5856101	8,600	1280	230	7.5	60/1	22
5856150	11,600	2000	230	9.8	60/1	22
5853100	10,200	1425	115	12.0	60/1	22
5883100	7,600	957	115	7.5	60/1	22
5852100	10,700	1575	230	7.8	60/1	22
5881100	8,000	1250	115	12.0	60/1	22
5881102	8,000	1250	115	12.0	60/1	22
5881103	8,000	1250	115	12.0	60/1	22
5880150	13,000	1960	230	9.8	60/1	22
5880152	13,000	1960	230	9.8	60/1	22
5880100	9,300	1650	230	7.8	60/1	22
5880101	9,300	1650	230	7.8	60/1	22
5880102	9,300	1650	230	7.8	60/1	22
5881104	8,600	1250	115	12.0	60/1	22
5880103	9,800	1650	230	7.8	60/1	22
5850100	13,100	1575	230	7.5	60/1	22
5885100	7,600	957	115	7.5	60/1	22
THE O. A. SUTTON CORP. (VORNADO)						
B100D-1	8,000	1330	115	12.0	60/1	22
B100D-2	8,000	1330	230	6.2	60/1	22
D100D-1	9,800	1380	115	13.0	60/1	22
D100D-2	10,500	1475	230	7.2	60/1	22
C100D-1	6,400	920	115	7.5	60/1	22
L100D-1	7,500	950	115	7.5	60/1	22
D100D-1R	9,600	1380	115	12.0	60/1	22
D100D-2R	10,300	1475	230	7.2	60/1	22
T100D-2	12,000	1600	230	7.5	60/1	22
D150D-1	11,000	1470	115	12.0	60/1	22
D150D-1R	10,800	1475	115	12.0	60/1	22
D150D-2	13,200	2050	230	8.6	60/1	22
D150D-2R	12,900	2050	230	8.6	60/1	22
D200D-2	14,400	2770	230	11.3	60/1	22
D200D-2R	14,300	2770	230	11.3	60/1	22
M300D-2	17,000	2700	230	12.2	60/1	22
M200D-2R	16,700	2700	230	12.2	60/1	22
WELBILT CORPORATION						
BWF1	3,300	750	115	7.5	60/1	12
BWG2	4,200	800	115	7.5	60/1	12
BWJ2	6,300	850	115	7.5	60/1	22
BWL2	7,300	950	208	6.5	60/1	22
BWM2	7,300	950	230	6.5	60/1	22
BWO2	8,800	1000	115	7.5	60/1	22
BWP2	8,800	1200	115	12.0	60/1	22
BWR2	8,800	1200	208	9.0	60/1	22
BWS2	8,800	1200	230	9.0	60/1	22
BWT2	11,000	1300	230	10.0	60/1	22
BWU2	11,500	1400	115	12.0	60/1	22
BWV2	13,000	2000	208	12.0	60/1	22
BWW2	13,000	2000	230	12.0	60/1	22
BWX2	15,000	2400	208	13.0	60/1	22
BWY2	15,000	2400	230	12.0	60/1	22
WESTINGHOUSE ELECTRIC CORPORATION						
RW-150S2	13,000	2380	230	11.0	60/1	22
RW-200S2	17,000	2430	230	11.0	60/1	22
RW-100S7	8,400	910	115	7.5	60/1	22
RW-200DA2	20,000	2840	230	16.5	60/1	22
SW-100C8	10,500	1415	115	12.0	60/1	22
SW-100CS2	10,500	1815	230	9.1	60/1	22
SW-150CS2	14,500	2480	230	11.7	60/1	22
SW-200CS2	16,300	2465	230	11.5	60/1	22
SW-100M7	7,100	900	115	7.5	60/1	22
RW50S	5,400	790	115	7.5	60/1	12
SW-75D7	6,400	870	115	7.5	60/1	22
SW-75C7	6,400	870	115	7.5	60/1	22
SAWC-75	6,600	1044	115	11.0	60/1	22
SAWC-752	6,600	1044	230	5.5	60/1	22
RW-75S7	6,600	850	115	7.5	60/1	22
RW-75S2	7,700	1110	230	5.5	60/1	22
RW-75D	7,700	1130	115	12.0	60/1	22
RW-75D2	7,700	1110	230	5.5	60/1	22
SW-100D	8,400	1365	115	12.0	60/1	22
SW-100C	8,600	1310	115	12.0	60/1	22
RWR-100S	8,800	1200	115	12.0	60/1	22
SWR-100D2	8,800	1615	230	8.5	60/1	22
SW-100S2	9,000	1220	230	6.0	60/1	22
SW-100D2	9,000	1615	230	7.5	60/1	22
SW-100C2	9,200	1615	230	7.5	60/1	22
RWR-100S2	9,500	1580	230	7.5	60/1	22
RW-100S2	10,100	1580	230	7.5	60/1	22
RW-100D2	10,800	1450	230	7.0	60/1	22
RW-150D2	13,500	1960	230	10.0	60/1	22
RW-200D2	16,500	2430	230	11.0	60/1	22
WHIRLPOOL CORPORATION (RCA WHIRLPOOL)						
I-8100-2	9,850	1350	115	12.0	60/1	22
I-8100-3	10,800	1550	230	7.8	60/1	22
IW-8100-3	10,800	1550	230	7.8	60/1	22
D-8100-2	8,400	1230	115	12.0	60/1	22
D-8100-3	9,600	1600	230	7.8	60/1	22
D-8150-3	13,200	2000	230	9.8	60/1	22
DW-8100-3	9,300	1400	230	7.8	60/1	22
F-8100-2	8,400	1230	115	12.0	60/1	22
WHITE STORES, INC.						
180-601	7,000	1200	230	7.5	60/1	22
180-603	7,000	920	115	7.5	60/1	22
180-605	8,000	1250	115	12.0	60/1	22
180-607	10,700	1500	230	8.0	60/1	22
180-609	12,300	2100	230	12.0	60/1	22
180-611	16,300	2550	230	12.0	60/1	22
YORK DIVISION BORG-WARNER CORPORATION						
F107-2	7,000	1030	115	7.5	60/1	22
F112-2	8,000	1300	115	12.0	60/1	22
F113-11	8,000	1300	230	6.3	60/1	22
FS100-11	9,500	1615	230	8.6	60/1	22
FS100-19	9,500	1615	208	8.8	60/1	22
FS150L-2	11,000	1600	115	12.0	60/1	22
FC200-11	14,500	2440	230	11.0	60/1	22
FC200-19	14,500	2440	208	12.0	60/1	22
FS200-11	16,000	2800	230	12.0	60/1	22
FS200-19	16,000	2800	208	13.5	60/1	22
FS100R-19	9,500	1615	208	8.6	60/1	22
E50-2	4,900	850	115	7.5	60/1	22
E75-2	7,500	1310	115	12.0	60/1	22
E75-11	7,500	1310	230	6.0	60/1	22
E75L-2	6,250	970	115	7.5	60/1	22
E100-11	9,500	1685	230	8.5	60/1	22
E100L-2	9,000	1350	115	12.0	60/1	22
E100LQ-2	8,500	1375	115	12.0	60/1	22
E150-11	14,300	2265	230	12.0	60/1	22
E200-11	16,000	2750	230	14.0	60/1	22

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

Chattanooga Dealers Sell 89 Home Cooling Units

CHATTANOOGA, Tenn.—Area dealers sold 89 home air conditioning units, including eight central units, during March, the Electric Power Board of Chattanooga announced.

There were also eight heat pumps and 12 electric furnaces sold for residential use in that month, along with 11 commercial air conditioning units, the board added.

Hotel Plans Room Units

AIKEN, S. C.—J. J. Teskey and Frank Limehouse, new owners of the Henderson hotel here, have announced plans for an extensive expansion program, including the installation of air conditioners and TV sets in every room.

Death Notices

Frederic A. Eustis, metallurgical engineer, director, and treasurer of Virginia Smelting Co., died in Boston recently. He was the son of the late W. E. C. Eustis, founder of the West Norfolk, Va. firm. The surviving twin brother, Augustus H. Eustis, is chairman of the board.

* * *

Thomas Coyle, former manager of du Pont's Chlorine Products Div., died recently at his home in Silver Springs, Del. He had suffered from a heart condition for some time.

* * *

William A. Lintern, 54, board chairman of Lintern Corp. and Larco, Inc., Painesville, Ohio, died of a heart attack in Boynton, Fla. He was in Florida testing a boat air conditioning system developed by Larco, it was reported.

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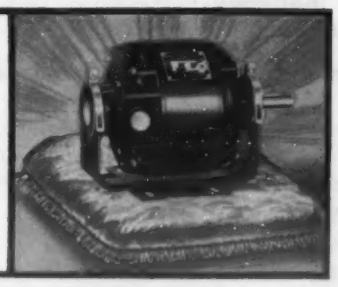
. . . and every one a perfect fit



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They'll Do It Every Time

by Jimmy Hatlo

I'LL HAVE ANOTHER CUP... DIDN'T GET ANY JELLY DOUGHNUTS TODAY? UH--I MUST REMEMBER TO BRING IN SOME IMPORTED COFFEE FOR YOU ONE OF THESE DAYS.. WHERE'S THE CREAM? WHERE'S THE SUGAR?
DUNKLEY THE FREE-LOADER LINES UP EVERY COFFEE BREAK, BUT WHEN IT'S CHIP-IN TIME, HE'S OUT WHERE THE WEST BEGINS...
DUNK IS THE STRAW BOSS WHO SAID NO DUCKING DOWNSTAIRS TO THE LUNCHROOM FOR SECOND BREAKFAST--NOW I KETCH WHY...
IMPORTED COFFEE, MY SAMOVAR! THE ONLY THING HE'LL EVER BRING IS AN APPETITE....
DON'T HE STILL OWE HIS SHARE OF THE KITTY FOR THE CHRISTMAS STAGGER? AND IT WASN'T COFFEE, NEITHER!!
THERE'S ONE OF THESE BRUNCH BANDITS IN EVERY OFFICE--DO YA EVERY TIME....
THANX AND A TIP OF THE HAT TO AL HENDERSON, LAKE ERIE COLLEGE, PAINESVILLE, OHIO
6-10
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Commercial and Industrial Market Waiting To Be Sold

WHILE the room air conditioner for homes may enjoy success in unit sales during the next several years, and while residential year-round air conditioning continues to look highly promising, the primary market for cooling equipment in terms of dollar volume will be found in the commercial and industrial fields.

Reason: It *pays* to install air conditioning in a store or factory.

There's a good story about two department stores located across the street from each other, one of which had cooling on two floors, while the other had none at all.

Owner of the second store proved adamant to all sales pressure on the part of salesmen for air conditioners. One persistent salesman, however, inveigled this tough owner into going up to the roof of his store on an especially hot afternoon. The two men looked down on the street scene below. What the owner of the non-air conditioned store observed from that vantage point threw him into a decline.

He saw men, women, and children leaving his store in a bedraggled state, mopping their brows and throats, and then going across the street to enter the air conditioned emporium. HIS COMPETITOR!

What's more, these human beings never seemed to leave the competing air conditioned store. They just stayed there, enjoying the cooler comfort, exposing themselves to his competitor's display of merchandise, and buying.

That's all Mr. Tough Prospect wanted to know. He didn't wait until closing time to watch the customers emerge with arms loaded with packages. He didn't ask about air velocity, equipment location, remodeling because of ductwork, or even prices. He just told the salesman to air condition his store and do it in a hurry.

Despite the continuing growth of the commercial market for air conditioning, it is by no means near the saturation point. All indications are that the commercial market will increase tremendously, year by year, particularly in small stores, apartment houses, hotels, doctor's offices, beauty parlors, and office buildings.

And the industrial market (factories and their front offices) has hardly been scratched.

That people want air conditioning where they shop, eat, sleep, work, and play is a foregone conclusion.

The recent du Pont nationwide survey (May 5, 1958, AIR CONDITIONING & REFRIGERATION NEWS Page 1) of the commercial and industrial air conditioning market pinpointed these conditions:

1. A possible 20% increase in sales for this national market in 1958 over 1957.

2. Biggest potential in number of package units to be sold is in retail and other small commercial establishments.

3. The room air conditioner is ubiquitous—a stronger factor in commercial and industrial applications than most people realized.

4. Market has not been *sold*—because great majority of firms now using cooling *"called in* someone who sells air conditioning."

Air conditioning specialists please take note. The *ready-to-buy* commercial and industrial market for cooling should keep your business growing for many years to come. But, if prospects don't seem to walk in the front door anymore, perhaps it might be wise to go out and dig up these sales.

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'The Conscience of the Industry'

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"If you think the editor sometimes makes a mistake in what he gives you to read, you ought to see the mass of stuff from which he saves you."—*Karl A. Bickel*, former president of the United Press.

SOME EUROPEANS LIKE ASRE STANDARD 34, SAYS BOGGS

The American Society of Refrigerating Engineers
New York 1, N. Y.

Editor:

I noted with interest the front page article in the May 12 issue of the NEWS concerning the acceptance by some Europeans of the ASRE Standard 34. The comments of Dr. Plank who, as you know, is one of our most respected members, have appeared in other European Refrigeration Journals.

Rather than make special comments on any of the parts of the report by Dr. Plank on the discussions of the ASRE Standard by 11R Commission 3, I have sent the enclosed reproduction of a lead article from the January/February issue of the Journal of Refrigeration. The underlined statements indicate that in certain parts of Europe there is a definite acceptance of our Standard.

I should like to point out to you, however, that ASRE Standard 34 was not developed for international use nor with any assurance that it would be submitted for consideration as such. The fact that it has been accepted and used by refrigeration engineers throughout the world is an indication that perhaps it should be given consideration by international bodies as a basis for an international standard. Such consideration will undoubtedly be given at a future date.

The initial paragraph of Standard 34 states the purpose as being: "To establish an ASRE standard method for the designation of those intended for refrigeration service."

I agree that the use of Standard 34 in certain European areas could present difficulties. This, of course, is true if a proposed system by some of the European refrigeration groups should be suddenly put into use in this country. I like the manner in which the editor of the Journal of Refrigeration states the case when he says that, "Whatever the merits of the alternative scheme, we think that it would be a great pity and a great chance of unification lost if either the International Institute of Refrigeration or the International Standards Organization were tempted to consider standardizing a different system to that used for so many years."

ANDREW T. BOGGS, III,
Technical Secretary

LIKES TRADE ACCEPTANCE NOTE IDEA

General Air Supply Co.
Dayton 7, Ohio

Editor:

We are very interested in an article which appeared in your May 12th issue.

The article was titled "Trade Acceptance Notes Aid Payments, 'Make Businessmen Out of Dealers'" and was written by C. Dale Mericle.

Could you please advise if this form is available for other businesses? We feel a form as this Trade Acceptance Note could be useful in our business which is distributor of heating and air conditioning equipment for Westinghouse Electric Corp.

Any information you can furnish will be greatly appreciated.

E. G. BARBER

Adjusting, Balancing Year-Round System (2)

Sees Unsatisfactory Air Conditioning or Heating Installations Endangering Future of Industry

In this issue and the preceding one, Ross Wallis, vice president of Meyer Furnace Co., tells how to balance a forced warm air heating or year-round air conditioning system.

He tells where and where not to locate the thermostat, how to set the blower for continuous air circulation, how to balance the heating side, and how to balance the cooling side.

The installer's job is not finished until this is done, he insists.

"With the blower set for CAC we're ready to proceed with the balancing.

"Usually we want to obtain a uniform temperature throughout the house with perhaps a little higher temperature in the bathrooms.

"The temperature of a room is a result of the temperature and quantity of the air delivered to the room.

"After the installation is finished, we can't vary the temperature of the supply air to each room. But we can change the quantity by adjusting the balancing dampers.

"The simplest procedure is to place a thermometer in each room and adjust the dampers until all the thermometers register the desired temperature.

"They should be matched thermometers and they should all be placed about the same height above the floor in a position where they will record average room temperature.

"If you don't want to invest in a set of thermometers, you can use the dry bulb of a sling psychrometer in lieu of a thermometer in each room.

Thermometers In Each Room Impress Customers

"However, thermometers placed in each room during balancing have a good psychological effect on the customer.

"After the system has been operating on CAC long enough to show the levelling effect, read and record the room temperatures.

"To those rooms that are above average cut the air delivery. This will increase the air volume to the other rooms and increase the temperatures.

"If the whole house generally is too cool except the room where the thermostat is located cut the air to that room. It will keep the burner operating longer and raise the temperature of all the other rooms.

"A small adjustment of a damper may make quite a difference in the temperature of a room. So, try to avoid overadjustment.

"It is pretty hard to tell how much effect changing the damper setting has on the air delivery without an instrument to measure the velocity. So it usually saves a lot of time to use a velometer or similiar device.

"Check the air velocities before and after adjusting the dampers and record them along with the temperatures.

"This record will save time in case you don't hit the desired balance on the first trial.

"It will usually take several hours for a house to assume its final temperatures after an adjustment of dampers. So it's best to leave the thermometers there and read them the next day.

"That takes a little more time. But keep in mind that this part of the job is important. Take whatever time you need to do it right.

"If in balancing it is necessary to do very much cutting down on the dampers, it is advisable to check the temperature rise through the furnace again.

"Remember that the air volume was originally set with all dampers open. Partially closing some of them sets up added resistance reducing air delivery.

"If the air delivery is reduced much below the original setting, there probably won't be enough air circulation to heat the house at design conditions.

"The limit control will keep shutting off the burner. This will prevent the house from coming up to the desired temperature.

"After the balancing has been completed mark the position of the dampers. Then if any of them are moved they can be put back to their correct position without going through the whole procedure again.

"When a combination heating and cooling system is used, Manual 6 also recommends a method for setting the blower speed for summer operation.

"This time instead of measuring temperature rise through the furnace we check temperature drop across the coil.

"This temperature drop should be about 20° when the blower and compressor are both running continuously.

"If it is more than 20° the air delivery should be increased. If it is less than 20° the air delivery should be decreased.

"Too much air will reduce the dehumidifying effect of the coil. Too little air will reduce the cooling capacity and may cause frosting of the coil.

"If any of the damper settings have to be changed for cooling, mark the final position for cooling as well as for heatting so the switchover from heating to cooling and back again can be done with a minimum of effort.

Why Go To All Of This Trouble?

"Why go to all this trouble when the job has already been finished?

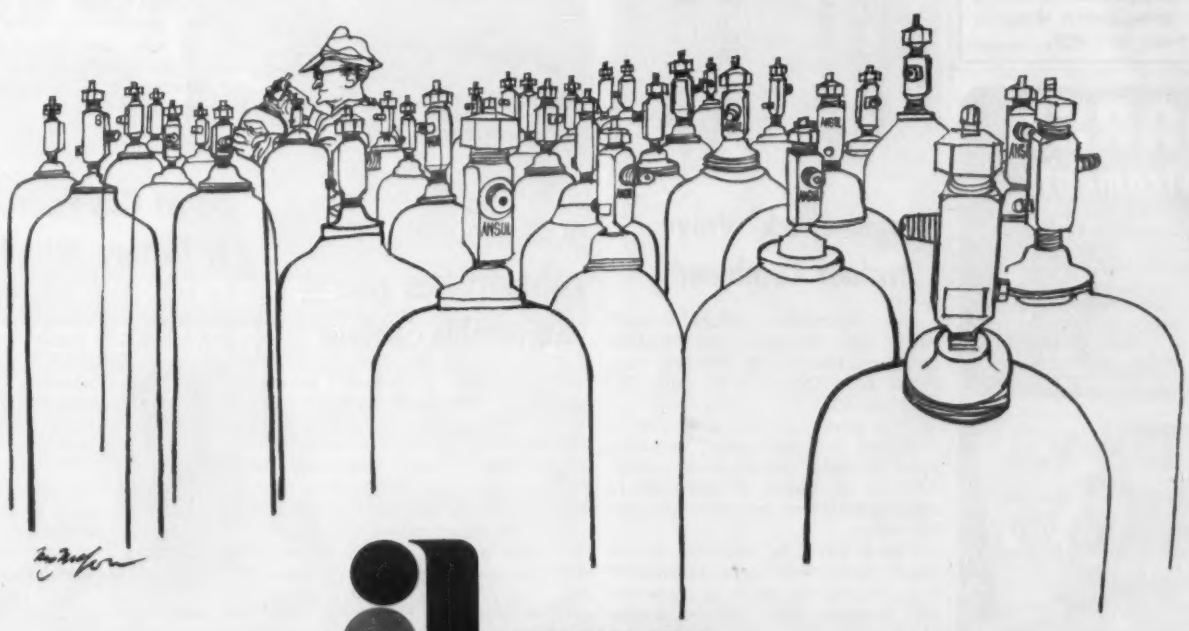
"Well, in the first place, if this balancing and adjusting hasn't been done the job actually *has not* been finished.

"Until it has been done the system can hardly be expected to deliver the comfort to which the purchaser is entitled.

"And if the industry as a whole continues to disregard its obligation to its customers in the future as it has in the past *then we have no future.*"

PEOPLE MAKE THE DIFFERENCE BETWEEN PRODUCTS

That's especially true of refrigerants. "Freon" has achieved its enviable position through dependability. Ansul is ready to bring you this best of refrigerants, but equally important, Ansul people are ready to bring you the best in service, the most in satisfaction. Write for helpful information about "Freon" and about the exciting chemical and mechanical products Ansul has developed for the refrigeration industry.



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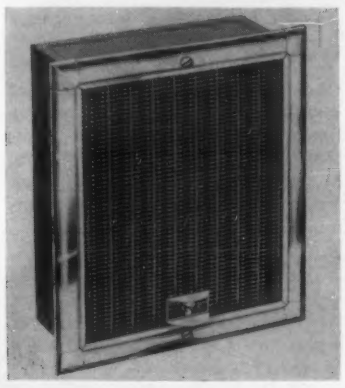

Fan Type Wall Heater Puts Out 6,800 Btuh.

A new fan-type electric wall heater of higher wattage has been announced by Broan Mfg. Co., Dept. AC&RN, Hartford, Wis.

This heater, the U-20, has a 6,800 B.t.u.h. output.

It projects only ¼ in. into the room, and the 4-in. wall box is shallow enough for dry wall construction. According to the manufacturer, it provides 10-second heating action, with a fan to distribute heat evenly.

NEW

17-CASE Cap. SELF-CONTAINED BEVERAGE COOLER $250

6 or more $235—10 or more $225

Stainless steel doors and track. Top, front and 2 sides finished in "Multikolor". All radius and ball corners. Tecumseh unit, concealed coils. No interior obstructions of unit or blower. Size—54" l. x 26" w. x 39" h.

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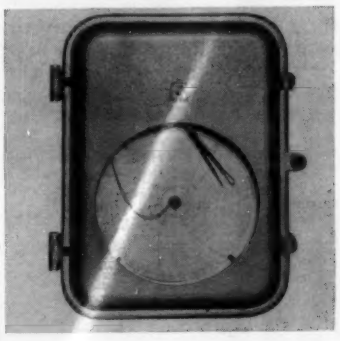
Improve Adjustable 'Norstat' Thermostats

Adjustable type A thermostats of improved design have been added to the "NorStat" line of thermostats, made by Norwalk Thermostat Co., Dept. AC&RN, Norwalk, Ohio.

The adjustable type features accurate performance as a result of lubricated ceramic setting insulator which makes point contact with a raised dimple of the lower contact spring blade, the company claims.

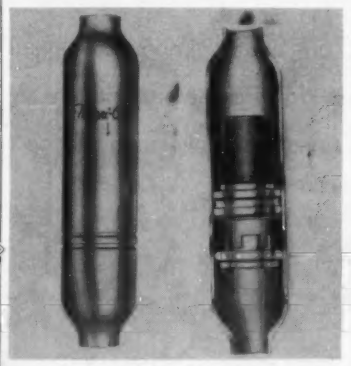
NorStat adjustable thermostats offer an operating temperature range of from 0° to 650° F. and a maximum rotation of 300°.



Mercury Actuates Temperature Recorder

Automatic and continuous recording of load temperatures is achieved with a newly developed all-weather temperature recorder recently introduced by Partlow Corp., Dept. AC&RN, New Hartford, N. Y.

Instrument, called model TRW, is mercury-actuated, requiring no external power source and is said to offer high resistance to road shock and vibration. The circular temperature chart gives visual, reliable proof of interior van temperatures, monitoring the operation of either heating or cooling devices. Accuracy to within 1% of scale range is claimed.

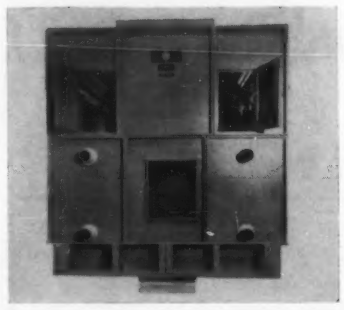


'Magni-Check' Valve, Strainer Combined

New spun-end "Magni-Check" valve and strainer combination has been offered by Watsco, Inc., Dept. AC&RN, 1020 E. 15th St., Hialeah, Fla.

This spun-end check valve is designed for permanent installations by either hard or soft solder. A built in monel strainer offers added protection for optimum performance.

Check valve is available in six sizes to accommodate tube sizes from ¼ to ⅞ in. o.d. inclusive, and features hard drawn copper shell.



Protect Heat Exchanger From Freezing Weather

New models of its sectional "Aero" heat exchangers in which the operation is completely protected from freezing in extreme winter climates have been introduced by Niagara Blower Co., Dept. AC&RN, 405 Lexington Ave., New York City 17.

Basic principle of the machine is cooling of a liquid by evaporation of a small amount of water on the surface of tubes through which the liquid passes.

Niagara machines maintain temperature control within close limits, it is claimed, by varying the amount of outdoor air flow across the coils, adjusting the capacity to the load, removing heat at the rate of input.

New "Winter-Summer" models enclose the air modulating dampers in a casing and provide for the restriction of the air supply by a manually operated damper in winter climates where the temperature remains below freezing temperatures for extended periods.

Packaged Chiller Offers Economy

A new packaged water chiller designed for economical air conditioning and refrigeration installations in the 18 to 250-ton capacity range has been developed by York Corp., subsidiary of Borg-Warner Corp., Dept. AC&RN, York, Pa.

Engineered to provide chilled water efficiently and economically for air conditioning, York packaged chillers are for process cooling and marine refrigeration.

Heart of each water chiller package is the York V/W compressor—using Refrigerant-12 or 22. Compressors are operated by a direct-connected motor, although a V-belt motor drive, is also available on packages with 4 or 6-cylinder compressors.

'Colshelf' Has Four Adjustable Shelves

New Weber "Colshelf," which has four adjustable shelves, all completely bathed with cold air, and no front glass has been developed by Weber Showcase & Fixture Co., Inc., Dept. AC&RN, 5700 Avalon Blvd., Los Angeles 11.

New refrigerated shelving has the same over-all height as wall shelving, and it fits into any market. All products in the Colshelf are illuminated by three full-length fluorescent lights.

Automatically Feeds Chemical Into Water

Introduction of its new gravity chemical feeder, for the air conditioning industry has been announced by Betz Laboratories, Inc., Dept. AC&RN, Gillingham and Worth Sts., Philadelphia 24.

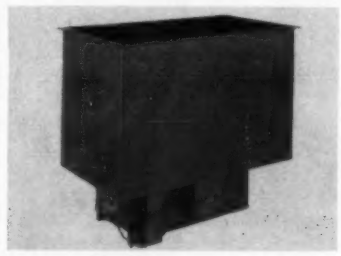
Through its use, the control of waterside corrosion and scale formation in air conditioning systems may economically be achieved by reducing the number of man hours usually required to properly feed chemical treatment and control blowdown, it is claimed. It is specifically designed to automatically feed chemical treatment to the recirculating cooling water of evaporative condensers, air washers, and cooling towers.

Five Refrigerants Canned by Ansul

Five different refrigerants introduced in 1 and 2-lb. disposable containers have been announced by Ansul Chemical Co., Dept. ACRN, Marinette, Wis.

The refrigerants are: "Freon-12," "Freon-22," "Freon-114," methyl chloride, and sulfur dioxide. Ansul is one of two authorized repackagers of duPont's "Freon" refrigerants.

Ansul packaged refrigerants are especially designed to be used in systems where a small charge of refrigerant is needed, such as auto air conditioners. No container deposits are required.



Oil Floor Furnace Has Shallow Well

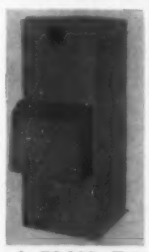
An improved type of oil floor furnace, designed with a shallow well, has been developed by H. C. Little Furnace Co., Dept. AC&RN, San Rafael, Calif.

New, shallow oil floor furnace is built with the "Electro-Jet" oil burner that reduces fuel cost approximately 15% through utilization of No. 2 fuel oil.

It is available with thermostatic control and is self-lighting.

Budget Gas Furnace Is Factory Wired

A new, low-priced gas-fired furnace that is factory assembled and wired for quick installation has been announced by Thatcher Furnace Co., Dept. ACRN, Garwood, N. J.



Known as "Comet 572-76," the new furnace measures 25 in. square and 65 in. high, has an output at the bonnet of 76,000 B.t.u. Input is 95,000 B.t.u.

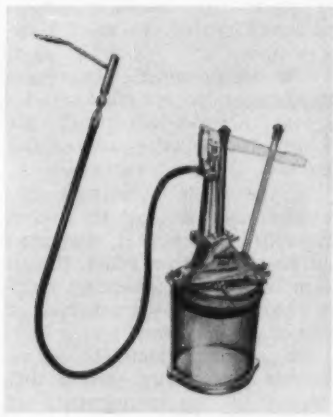
'Swing 'n Serve' Shelves Lift Out

A new 15-cu. ft., two-door refrigerator-freezer with a 162-lb. capacity freezer compartment on the bottom has been announced by Norge Div., Borg-Warner Corp., Dept. AC&RN, Merchandise Mart, Chicago 54.

Swing-out shelves, crisper, and automatic ice cube maker are highlighted in the square-styled, upside-down model.

"Swing 'n Serve" shelves and crisper swing clear of the refrigerator interior at the touch of a finger. They may be lifted out for serving, use at the work area, or for easy cleaning. All swing-out units are mounted on die-cast aluminum frames attached to a grooved steel rod. Empty or fully loaded, the shelves can be raised or lowered to new positions by means of a small lever.

Automatic "Handi-Cube" ice dispenser is filled without trays being removed from the refrigerator. A specially designed plastic container with measured capacity is used. When freezing is complete, cubes are automatically released into a slide-out ice bin. As many as 108 cubes are kept dry and separate, ready for immediate use.



Applies Caulking from Original Container

Caulking and glazing compounds, roofing cement, mastics, sealants, putties, and adhesives can be applied quickly with "Caulk-Flo," a new device introduced by Force-Flo, Inc., Dept. AC&RN, P. O. Box 2442, E. Cleveland 12, Ohio.

New unit consists of a high volume pressure system and a high-pressure pumping mechanism, complete with a hose and nozzle assembly. By placing the unit on a 50-lb. or 5-gal. standard bucket, the material may be applied directly from the original container to the point of application.

Because material is taken directly from bulk containers and applied through the unit's nozzle assembly without caulking guns and expensive cartridges, there is a claimed savings. The process of filling a caulking gun from the material contained in a 5-gal. bucket is entirely eliminated.

FOR MORE INFORMATION ON THE PRODUCTS DESCRIBED ON THIS PAGE
Write Directly to the Company—*at the Address Given in the News Item*

TECHNICAL CENTER

By Frank J. Versagi, Technical Editor

Water—Copper-Plating—Oils

"The opinion that water is essential for copper-plating is refuted in so far as copper-plating can be produced with materials which have been desiccated to the utmost extent possible."

This is one of the findings reported by Dr. H. Steinle, refrigeration engineer of Robert Bosch GmbH (Ltd.), Stuttgart, Germany, in his study of stability of refrigerant-oil mixtures.

While abstracts and partial reports of Dr. Steinle's findings have appeared in American journals, he has supplied the NEWS with a complete report of his testing methods and results from which we are presenting his major conclusions, since he states that he has received many American requests for more information on his work.

Perhaps the most significant phase of Steinle's findings is the conclusion that "working with suitable lubricants, copper-plating cannot be initiated by water." The chemical composition of the oil is the important factor, according to him. Further, copper-plating will not occur with refrigerants which do not contain chlorine.

Refrigerants 12 and 22, of course, both contain chlorine, and of these Steinle says, "Refrigerant-22 is just as stable as 12," confirming results obtained by some tests in this country.

He reports that dissolved copper is not initially present in combination with mineral acids (hydrochloric acid in this case) but is present as an organic chemical compound. "Copper is dissolved by oil resins and their components from where it is freed by hydrochloric acid resulting from reaction between chlorinated refrigerants and oil resins. Copper is then plated out on iron, and an equivalent amount of iron goes into solution."

Sludge analyses have revealed a yellowish-white iron compound only after copper-plating has taken place, confirming the mechanism.

Further evidence that copper dissolves in the organic chemicals is found in the fact that organic extracts from non-metallic materials on terminal posts of hermetics will dissolve copper and lead to copper-plating. Pure oils, which do not dissolve copper, can be made to cause copper-plating by the addition of such extracts.

"Copper-plating does not appear at all in pure oils, nor in oils in combination with chlorine-free compounds," according to Steinle.

The "pure oils" of which Steinle speaks are oils meeting the following specifications:

"Resin content less than 0.3% by weight;

Sulfur content less than 0.2% by weight;

Aniline point should be higher than 212° F.;

Oil-refrigerant stability should be at least 96 hours."

"Durability tests" were conducted on operating equipment to verify results obtained in the laboratory by "bomb" methods. The operating tests were such that the compressor was lagged or additionally heated to hold winding terminal temperatures at 284° F. under continuous load. The machine has to operate 12 weeks under these conditions without showing major corrosion or defects.

Table I summarizes the results of the laboratory (bomb) tests and durability tests with the different grades of oil. It can be seen that with an increasing resin content, and a correspondingly increasing sulfur content, copper-plating becomes more likely. Analysis showed that copper *solubility* increases as the resin content of the oil increases.

The influence of temperature on copper-plating was found to be important. At temperatures under 104° F., no copper-plating occurred; at 158° copper-plating was extensive; at 212° all except the white oils showed copper-plating. "Good heat transfer off compressors is mandatory on hermetic units," Steinle points out.

Returning to the subject of water, he states, "The solubility of copper and the resultant copper-plating are increased by the presence of water, but the influence of refrigerants is much more effective.

"According to the results at hand, a significant increase in copper-plating seems to occur only as a consequence of water contents which are so high that they would not be permissible in a Refrigerant-12 system.

"While contaminants, in general, advance the appearance of copper-plating, water is of lesser influence than normal refrigerants," Steinle concludes.

Readers desiring to contact Dr. Steinle may write him at this address:

Dr. H. Steinle
Robert Bosch GmbH
Postfach 50
Stuttgart, Germany

Table 1: Test—Oils for Hermetic Refrigerators

Oil No.	Oil-Resin %	Sulphur %	Aniline-Point °F.	Refrigerant-Stability Hours With SO_2	Refrigerant-Stability Hours With F-12	Copper-Plating In Bomb-Test	Appearance of Parts
				a) No Failure In Durability-Test			
1	0.08	0.03	217	>168	>144	no	no copper-plating, clean.
1a	0.08	0.01	225	>792	>792	no after	no copper-plating, clean.
1b	0.07	0.04	216	>360	>360	no 21	no copper-plating, clean.
2	0.26	0.12	216	240	264	no days	no copper-plating, clean.
2a	0.45D+	trace	235	72	96	no	no copper-plating, gray.
				b) Failures In Durability-Test			
3	0.77	0.13	(170)	96	72	in 5-7 days	failure within 5-9 weeks, strong copper-plating.
4	0.82	0.15	(169)	72	72	in 5 days	very strong copper-plating in 2-10 weeks.
5a	0.86	0.49	192	48	48	in 3-5 days	failure within 1-3 weeks, copper-plating and corrosion.
5b	1.10	0.74	207	16	24	in 1 day	failure within 2-7 days, copper-plating and corrosion.

D+ = Dope or additive.

Copper Tube

How much difference, if any, is there between copper water tube and refrigeration tube?

Who orders copper tube by O.D.; who orders nominal sizes? Why?

What kind of copper tube goes into radiant heat ceiling coils? Into floor slabs?

A comprehensive review of copper tube nomenclature, and application will begin in the next Technical Center.

THE MASTER SERVICE MANUALS - - -

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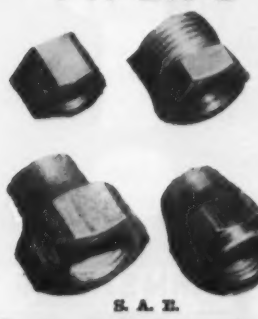

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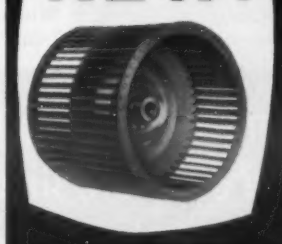

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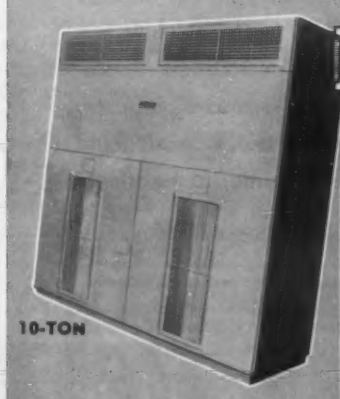

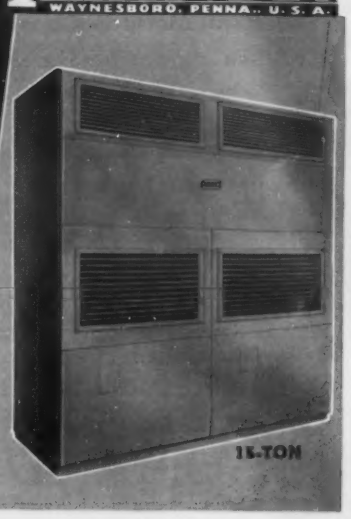

Write for Frick Bulletin 522-F giving full details of the advantages of these unit conditioners.

Phoenix Builder To Heat 2,500 Homes With Gaffers & Sattler Warm Air Units

PHOENIX, Ariz. — Twenty-five hundred homes scheduled to be built in the Maryvale development on the west side of Phoenix by John F. Long Home Builder, Inc., in 1958 will be equipped with Gaffers & Sattler forced air heating equipment supplied by Utility Appliance Corp.

The announcement was made jointly here by Long; Landon Bates of the Bates Sheet Metal Works, the heating contractor; and Herman Wertheimer, Gaffers & Sattler factory representative.

Long's homes, offered in more than 40 designs and ranging in price from $9,750 to $14,995, will be built at a cost exceeding $27.5 million, it was reported.

The 2,500 homes forecasted for '58 is a 40% increase over '57.

Housewives Say

We Like: Comfortable Heat, Cleanliness We Don't Like: Too Hot Heat, Dry Air

WASHINGTON, D. C.—Even, comfortable heat and cleanliness.

Those were the two attributes most appreciated by housewives who discussed their heating problems at *McCall's* magazine's Congress of Better Living staged here last fall.

Random comments made by the housewives who came from every part of the country were compiled and released recently by the Psychological Corp. These comments are individual views and do not represent any concensus of the Congress.

The ladies not only expressed their mind on what they liked about their heating systems, but were equally vocal on what they did not like about them and what they expect from manufacturers and dealers.

Do Installers Know All They Should?

"Don't you think that people that install furnaces frequently don't know all they should know?" one housewife asked.

"They don't know how to adjust them," she observed. "When you buy brand names, well, you think if that manufacturer sends it to this fellow, he probably knows how to put it in. I mean how do you know?

"I don't think we know what the things we buy really do. I think we ought to investigate."

"We feel it is the manufacturer's responsibility to teach good service to his distributors," asserted another delegate.

Other comments as the discussion progressed:

"Not everyone of us has the intelligence or the time to be our own detectives."

"I appreciate the fact that all manufacturers are absolutely tied to their distributors and their servicemen."

Devil Them Till They Make It Right

"I think we have no choice. We have just got to be familiar with the problems of each thing we buy for the house and just devil them until they make it right. I don't care whether they make a nickel or not. I want what I have spent by money on to work.

"As a result, I take a builder's magazine. I try to keep informed on what is available and how it should operate.

"Just in self-defense, the homemaker has got to keep herself informed and insist on the quality that the manufacturer thinks he is giving us."

"Something we feel is that the people that sell us the furnaces have an obligation to see that those furnaces work well for us. Why don't they provide us with the information as to how we can best use it?

"The gentleman from (company) came out to see us. I tried to ply him with questions. He told me he was very busy and he had no literature. Perhaps some day he would stop by and give it to us."

The ladies' likes and dislikes about their heating systems seemed to apply to all types: hot air, hot water, or radiant panel heating. Here are some reasons for liking their heating systems:

"I like mine because I think it's clean."

"The hot air is marvelous. No dust, no pollen. The house can be warm three minutes after you push the button on the thermostat.

"I don't find my house dirty with hot air."

"Our system of forced air and our outlets seem to be well enough designed that we don't walk through a warm area into a cold area."

"I have hot water heated by oil. I have conductors and radiators and baseboard. I love it because you can add to it. It is very easy."

"I like ours because it is inexpensive and very fast.

"We have radiant heat and we love it. It heats the air just right, doesn't dry it out, but maintains a constant temperature. One thing more about radiant heat. It's cheap."

Fuzz on Furniture Irks

On the other side of the coin, dirt, uneven heat, drying out the air, and too hot heat were chief complaints of the dissatisfied.

"I have floor furnaces in my house. My complaint against them is that fuzz off the carpets is naturally in the air. When the heat comes up, I could dust five or six times a day because there is fuzz continuously on my furniture. In summer, when we are using the air conditioner, I have not had that problem."

"There isn't a place in that furnace where you can vacuum and get that dust out."

"The minute I turn my heat on, my cleaning just goes double. We do clean our furnace and do clean the filters. But it can't be helped."

"I have gas, hot air, and it is very dry. This winter we froze. Then we found out it was because our basement was drying out. At least that's what they told us.

"We put a humidifier in and it helped a little bit. But it is still awfully dry. We all get colds and we all get stuffy, and, of course, it has an odor when it first comes on."

"I think they ought to build

(Concluded on next page)

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Women - -

(Concluded from preceding page)

those humidifiers in. Ours didn't have one and we didn't think about it. Consequently we don't have it."

"There was this hum to the forced hot air. I said this is music to my ears, I like this noise. But now living with it for my third year and having guests come in and say, 'Is it raining?' I say, 'No, that is the heat.' Then the next time this swish comes, everybody jumps a little, and I say, 'Heat, you know.' "

"Our only objection is our old radiators. They are too big and bulky."

"I can't put furniture in front of these forced air registers. The house is a lot dirtier. It is good even heat and it is cheap, however."

"I don't like the forced air blowing directly on you."

Wants More Thermostats

"We have forced hot air and it comes out of the center circular thing. I think that is much better than the little square boxes where the dirt collects. I would like more thermostats so each room is controlled. Our thermostat is in a warm corner. We have to turn it up for the rest of the house."

"I have forced air on a slab floor. It's not warm in winter. I want radiant heat."

"Sometimes our forced air heating is efficient. But they put the registers in the wrong places. For instance, in our recreation room it is often chilly in winter because the man installed the heating ducts in the top of the room instead of near the floor."

Health Affected

"Definitely my family's health is affected by our heating system. When the house is too hot, my children are more susceptible to colds. Definitely it dries out the nasal passages."

The housewives recognize that the heating system was an important factor in the home. As one visitor put it:

"I think your heating system is one of the most important things in your home because if you are not comfortable, why have all the pretty surroundings?"

Another: "If I were to buy a new house and I found the heating system would give me less work, that would be a big factor in my deciding on that house."

"The first thing people will gripe about is if the house is not warm enough."

"We have a turn duct in the hall that is a dust catcher that's terrible. It is located low and it is a lovely place for children to stick objects."

A heating system, like a diamond, is forever, the housewives believe. Their views:

"When I put a new furnace in, I expect it to last 40 years."

"I don't see any reason why our heating system shouldn't last the rest of our lives. We just put $1,500 in a heating system."

"I think the heating system should last 15 or 20 years."

"I think that any manufacturer that gives over a two-year parts guarantee is a fool."

31-Point Heating Check List

Each Man In Crew Must Sign Form Designed To Assure Firm And Homeowner That All Details Have Been Checked Out

By George M. Hanning

MARION, Ohio—"This is the most important part of the installation.

"Take time. Do it right!"

Thus starts off a 31-point checklist that must be made out on every heating installation made by a crew from Montgomery Bros., heating and air conditioning dealership here.

"Checklist" may not be quite the right word to describe the check, test, and start record reproduced on this page. The installation foreman making it out cannot merely check off items. He must answer each question yes or no. Then he must explain the "no's" on the reverse side of the sheet.

When the form is completed, every man in the crew signs it.

A lot of unnecessary, extra work for a busy crew?

Not so, contends Carl Montgomery, who, with his brother Rolin, operates Montgomery Bros.

It is important for two major reasons, he says.

Referral Business Demands Satisfied Customers

First, 80 to 90% of the company's business comes as a result of referrals by satisfied customers.

This being the case, Montgomery Bros. "can't overlook satisfying *everybody*," he contends. "One or two words from a satisfied customer has more power to convince than a whole sales talk by a salesman."

That means installations must be done correctly. This form makes sure this is done.

Second, having to complete the form on each job impresses each man with his own responsibility for a good installation.

"Most important result is that the men know you want the job done right," Montgomery said. "But it also acts as a check for management that the job is well done. It places responsibility for errors, thereby evaluating the work performance of every man. Lastly it is a protection against future customer complaints."

The form was developed out of necessity, he explained. Montgomery Bros. is a small firm and can only afford to keep two installers on a year-round basis.

Can't Count on Men Hired for Busy Season

During the busy season, outside help is taken on. The two regular men become foremen, heading crews of part-time men.

"We can trust these men to see that a satisfactory job is done. The difficulty came when we had to add a third crew, with an outside man as foreman.

"This man may be a good foreman and capable of doing a good job. But, knowing his employment is temporary, he does not feel the same sense of responsibility the other do about checking details. If something is overlooked, he won't be around when the customer finds out about it.

"To counteract this attitude, and because it was impossible to double check every job personally, we developed this form."

Basically the form is one that many heating wholesalers offer their dealers. But none of these prepared forms covered all the points Montgomery wanted checked. So he drew up the one illustrated here.

Of course, he noted, having a checklist isn't everything. Basically, you have to have good, conscientious men.

"We select our employes as carefully as any large corporation," he asserted. "We don't just hire anybody. We investigate every applicant. Essentially we won't send any man into a customer's home we wouldn't be proud to have in our own."

Once hired, the company helps the men get all the training they can.

"We believe that training is very important," Montgomery said. "When going out on an installation or service call, the man should at least know what he is doing."

Being secretary of the Scioto chapter of the Refrigeration Service Engineers Society, Rolin Montgomery encourages all his men to attend RSES meetings.

THIS IS THE MOST IMPORTANT PART OF THE INSTALLATION
TAKE TIME — DO IT RIGHT!

MONTGOMERY BROS.
Heating Check, Test, and Start Record

Fuel — Gas ☐ Oil ☐ Coal ☐

DATE .....

OWNER'S NAME ..... ADDRESS .....

MODEL FURNACE ..... MAKE ..... UNIT SERIAL .....

NOTE — DON'T CHECK ITEMS — WRITE YES or NO

Item		Write Yes or No
1.	Did you have a Job Sign displayed	....
2.	Proper Gas Input in B.t.u./hr..... Nozzle G.p.h..... Is Nozzle Tight	....
3.	Primary Air Adjusted for Proper Flame and Setting Tightened	....
4.	Pilot Light Flame Proper ..... Ignition Points Set	....
5.	Draft Stabilizer or Diverter Properly Installed ..... Gas Damper	....
6.	Smoke Pipe and Chimney Satisfactory and Sealed	....
7.	Stack Temperature .....°, Draft ....."	....
8.	Thermostat Checked ..... Differential .....°	....
9.	Fan Switch Set, On .....°; Off .....°	....
10.	Limit Switch Set .....° Is Limit Working	....
11.	Humidifier Operating and Water Level Set	....
12.	Blower Wheel Clearance Proper	....
13.	Pulleys in Alignment and Tight on Shaft	....
14.	Belt Tension and Fan Speed Proper	....
15.	Blower and Motor Bearings Oiled	....
16.	All Registers Free of Restriction and Dampers Set Open (Except Basement)	....
17.	Boilers—Pressure Control or Aquastat Set, On ...., Off	....
18.	Steam—Low Water Cut-Off Working	....
19.	Steam Boiler Flushed and "Blowed Down," Water Clean	....
20.	Forced Water—Pump and Motor Lubricated	....
21.	All Radiators Air Vented and Heating	....
22.	All Controls Work Properly—Safety Pilot..... Relay.....	....
23.	Gas or Oil Lines Tested and Free of Leaks ..... Are you sure	....
24.	Unit Clean Inside and Out.—All Ducts and Pipes Supported and Straight	....
25.	Has Installation Drawing Been Returned to Office	....
26.	Owner or Operator Instructed on Operation and Care	....
27.	Operation Instruction Card Placed by Unit	....
28.	Are you Proud of this Installation	....
29.	STOP! Have you Picked Up Job Sign, All Tools and Mdse	....
30.	Check Plans Against Installation **Again.** Is it complete	....
31.	Have you Done a Good Job of Cleaning Up	....

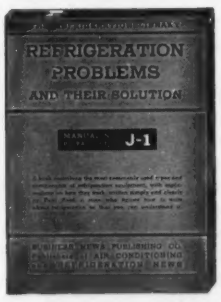
GIVE REMARKS ON REVERSE SIDE BY ITEM NUMBER WHEN "NO" IS CHECKED.

SIGNED (By **All** Men On Job) .....
.....
.....

REFRIGERATION PROBLEMS

AND THEIR SOLUTION

by PAUL REED



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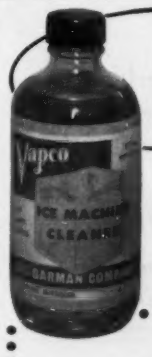

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Air Distribution Requirements In Year-Round Air Conditioning

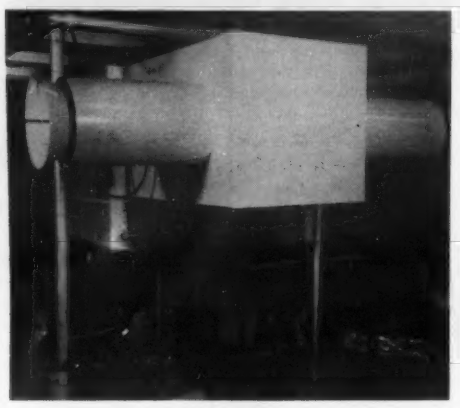

FIGURE 20.

FIGURE 21.

Part 2—Fundamentals of Air Handling

By Frank D. Klein, Chief Engineer, Governair Corp.

The following Formulae is used as Correction Factor data.

TO CORRECT FOR AREA:

To correct velocity pressure obtained from the inlet of the outlet or inlet duct to the outlet of the fan:

(a) Outlet:

$$P_v = \left[\frac{A_o}{A}\right]^2 \times p_v$$

(b) Inlet:

$$P_v = \left[\frac{A_i}{A}\right]^2 \times p_v$$

TO CORRECT FOR AIR DENSITY:

Because pressures and horsepower vary directly as the ratio of air densities, at constant speed, to correct to standard air, multiply test values by the following ratio:

(a)

$$\frac{d_a}{d_p} = \frac{.075}{d_p}$$

TO CORRECT FOR SPEED:

As stated before volume varies directly with speed, and pressure with the square of speed and power as the cube of speed for constant conditions, multiply test values by the following ratios:

(a) For Volume:

$$\frac{\text{Rpm}}{\text{Rpm}_x}$$

(b) For Pressure:

$$\left[\frac{\text{Rpm}}{\text{Rpm}_x}\right]^2$$

(c) For Horsepower:

$$\left[\frac{\text{Rpm}}{\text{Rpm}_x}\right]^3$$

With the foregoing in mind refer to Figs. 18 and 19 (in May 26 issue) which are abstracted from the Standard Test Procedures of the Air Moving & Conditioning Associations, Inc. Here in these four examples are given the typical methods and calculations for values as conducted in the laboratory.

There is no need in pursuing detailed mathematical calculations further than these, as the only purpose here is to indicate through these methods the adaptations which, with care and imagination can be made in the field and in equipment design laboratories. These are the "yardstick observations" that should guide both integrating such equipment into other assemblies as well as observations in the field.

In Figs. 20 and 21 are illustrated tests being made on an assembled product into which has been integrated previously rated Fan equipment. The tests being made here are to prove the capacities and efficiencies of the fan equipment in the particular air handling product.

In Fig. 20 is seen the product with an adaptation of the discharge chamber and ducts with cone restrictors, whereby resistance may be varied, in accordance with the requirements of the American Gas Association. This product is a year-round Duct Type warm air furnace which is suitable for add-on cooling.

In Fig. 21, velocities, static pressures, and discharge temperature are being measured directly by an Anemotherm.

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- **changing territories**
- **expanding your territory**
- **taking on new lines—**

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Consulting Engineers Council Sees Accepted form for Architect-Engineer Agreements of Major Importance

SAN FRANCISCO—Consulting Engineers Council, national organization for consulting engineering groups, met here recently for its second annual convention, with directors present from 21 state and area groups.

This is more than double the 10 groups that started the council in 1956.

First day of the convention the 21st affiliate, Consulting Engineers Association of Michigan, was accepted and seated.

CEC was recently incorporated as a non-profit corporation. Three more groups are reported considering affiliation.

Groups Not Technical

Like CEC itself, affiliated state and area groups are not technical but concern themselves with business and professional problems of the private consulting engineer.

Resolutions adopted by CEC include:

- Procedure to be followed in answering bid proposals.
- Restriction of architects' contractual responsibility with local Public Housing Authorities. Normally terms are binding on the consulting engineer in association with the architect.
- CEC can now accept members-at-large in states or areas where no consulting engineers' association exists. Previous policy restricted membership to associations.
- Provided for attendance May 29-31 at Oslo, Norway, meeting International Federation of Consulting Engineers, of CEC immediate past president, Edward J. Wolff of Chicago.
- Next semiannual meeting of board of directors, made up of one director from each affiiliated association, be held in Texas during early part of November at place and time designated by the two Texas groups. San Antonio, reported possible location of a new consulting engineers association, was one place mentioned.

There was discussion about union efforts to organize engineers and engineer personnel, about CEC group health and hospital insurance, use of CEC insignia, fee schedules, and H.R. 7168 (the so-called "anti-bid shopping" bill).

Larry N. Spiller of Springfield, Ill., executive secretary of CEC, said the convention considers an accepted form for architect-engineer agreements is of major importance, and will continue to work to accomplish this.

Consulting Engineers Council feels there has been lack of cooperation by the national office of the American Institute of Architects, Spiller said.

It is understood AIA is working out something in regard to an architect-engineer contract form with the American Society of Civil Engineers and the National Society of Professional Engineers.

CEC regards this as duplication of effort, since member groups of CEC have been working with local AIA chapters for some time to obtain a satisfactory architect-engineer form.

George W. Poulsen of Salt Lake City, chairman of the documents committee, said the Consulting Engineers Council is getting into a position where it can publish an engineer-owner contract form for use in all parts of the U.S.

Working on Form For Engineers

CEC is also working out the preliminary stages of a form the engineer would use when undertaking to do electrical, mechanical, or structural work as a consultant.

Poulsen said CEC is also interested in setting up the form of the general conditions that are normally a part of an engineering specification contract.

New officers of CEC installed at the convention: president, Charles C. Pate of Tulsa; first vice president, L. K. Crawford of Springfield, Ill.; second vice president, Ralph M. Westcott of Los Angeles; secretary, Hueston M. Smith of St. Louis; treasurer, B. M. Dornblatt of New Orleans.

Together with immediate past president Edward J. Wolff, these new officers of CEC make up its executive committee.

Hotel Cooling

PORTLAND, Ore.—Work has begun to modernize the Multnomah hotel here, the project to include air conditioning of all meeting rooms.

"The 1958 Air Conditioning Specifications Guide"

is still available in limited supply.

Contains complete data on Heat Pumps, Commercial Packaged Air Conditioners, Residential Air Conditioning Systems, and Self-Contained Room Air Conditioners. . . .

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WHAT . . WHEN . . WHERE

— A Guide to Coming Events of Interest

Institute of Appliance Mfrs. Annual Convention, Exposition
June 1-4, Netherland-Hilton hotel, Cincinnati.

National Association of Retail Grocers Convention and Exhibition, June 8-12, Coliseum, New York City.

Edison Electric Institute Annual Convention
June 9-12, Boston.

Oil-Heat Institute of America Convention, Exposition
June 9-13, New York City.

American Society of Heating & Air-Conditioning Engineers and American Society of Refrigerating Engineers JOINT MEETING
June 23-25, Leamington hotel, Minneapolis.

National Plumbing-Heating-Cooling Exposition and National Association of Plumbing Contractors Convention
June 30-July 3, Pan Pacific Auditorium, Los Angeles.

How the NEWS penetrates the residential air conditioning market

AIR CONDITIONING & REFRIGERATION NEWS—with its comprehensive editorial coverage on every phase of the industry—is read by nearly all important buying influences in this growing market.

Here's proof: When the editorial staff of the NEWS prepared a booklet based on pertinent articles and entitled it AIR CONDITIONING THE HOME—better than 10,000 copies were requested in short order. Here was essential information on everything from what the homeowner expects of year-round air conditioning to installation techniques.

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The Weekly Newspaper of the Industry

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DETROIT, 450 W. FORT ST.,
WOODWARD 2-0924, JOE SULLIVAN.

1,064 Residential Systems Installed In Memphis In '57, NEWS Finds

'Back Alley' Dealers, Too Few Hot Nights Make Year a Rough One for Profitable Sales

(Concluded from Page 1)

distributors revealed that 1957 was a rough year in residential air conditioning. The city never experienced the succession of really hot nights that salesmen consider essential to real volume.

More "back alley" dealers, as the well-established brethren call them, got into the act last year, at least enough to nip off a few sales here and there.

Many contractors frankly confessed that their sales of residential air conditioning were not profitable. The NEWS survey tended to confirm this.

A large number of contractors doing business in 1956 were nowhere to be found in 1957. Others who chalked up good volumes last year had passed out of the picture by the time our survey was taken this spring.

As a case in point, the No. 1 contractor for 1957 is now out of the air conditioning business. So are three others.

Of the 27 contractors and distributors who participated in the 1956 survey, 11 could not be found this year.

Comparing 1957 survey figures, shown in the accompanying table, with those of previous years (the NEWS conducted surveys in Memphis in 1954, 1955, and 1956), three trends appear to be significant.

1. The combined air conditioning and heating contractor is beginning to exert a dominant influence in the Memphis market. Thirteen out of 25 contractors and distributors listed handle both cooling and heating. Between them they sold 70% of the total volume.

2. For the first time, the number of units installed in new homes exceeded those installed in existing homes. In 1957, 543 units were placed in new homes as compared with 521 in existing homes. In 1956, the respective figures were 564 and 676.

Air-Cooled Equipment Has Almost a Monopoly

3. Air-cooled equipment has gained almost a complete monopoly of the residential market. Only 24 water-cooled units—all with cooling tower—were installed during 1957 as compared with 201 in 1956.

The accompanying table shows a total of 543 air conditioners installed in new homes. The decision to purchase the particular unit installed was made by the builder in about half the cases and by the homeowner in the other half.

In several instances, the contractor was not at all sure who made the final decision. This year, the homeowner made a few more decisions than the home builder. In the past two years the edge has been with the builder.

The 543 units installed in new homes about equalled the 564 installed in 1956. But the number installed in existing homes dropped sharply from 676 to 521.

Tabulation of Memphis Home Cooling Story

Contractor	1957 Total Sales	–New Homes– Owner	Builder	Existing Homes	Year-Round Systems	Cooling Only	–Air Cooled– Remote	S.C.	Water Cooled	With Tower	Sheet Metal Shop
1	150	20	20	110	40	110	146	3	1	1	No
2	132	43	43	46	86	46	130	0	2	2	Yes
3	110	72	7	31	18	92	80	28	2	2	No
4	110	18	17	75	5	105	45	65	0	0	No
5	94	0	77	17	77	17	92	2	0	0	Yes
6	88	18	6	64	18	70	88	0	0	0	Yes
7	56	20	19	17	45	11	49	7	0	0	Yes
8	52	22	10	20	45	7	49	0	3	3	Yes
9	50	20	18	12	50	0	37	3	10	10	Yes
10	30	0	10	20	10	20	30	0	0	0	Yes
11	30	15	0	15	15	15	28	0	2	2	Yes
12	23	7	3	13	10	13	21	1	1	1	No
13	22	6	2	14	8	14	14	7	1	1	No
14*	20	0	0	20	0	20	..	..	0	0	No
15	20	7	7	6	20	0	15	5	0	0	Yes
16*	15	0	15	0	15	0	15	0	0	0	No
17	12	0	0	12	0	12	8	4	0	0	No
18*	10	1	9	0	9	1	..	..	0	0	No
19	9	0	1	8	1	8	9	0	0	0	No
20*	9	9	0	0	9	0	9	0	0	0	No
21	7	1	0	6	1	6	6	0	1	1	Yes
22	7	0	0	7	0	7	3	4	0	0	No
23	3	0	0	3	0	3	0	3	0	0	No
24	3	0	0	3	3	0	3	0	0	0	No
25	2	0	0	2	0	2	1	0	1	1	No
Total	1,064	279	264	521	485	579	878	132	24	24	

*Distributor

Year-Round Installations Hold Up Well

In what would seem a corollary to this, the number of year-round systems held up well as compared with last year—485 installations in 1957 and 492 in 1956. But installation of cooling only dropped from 748 in 1956 to 579 in 1957.

It could be that the influence of weather shows up here. The new homeowner has to have heating (so why not cooling, too) regardless of the weather at the time of purchase. But the existing homeowner can put off the purchase of a cooling system if he so desires.

In making the above comparisons, it must also be remembered that the 1957 survey figures fall 94 units short of the utility's figures. It is doubtful that these additional units would change the above comparisons significantly.

But, added in the same proportions, they might boost the number of units installed in new homes beyond the 1956 total and soften the drop in existing home installations.

By the same token, the number of year-round installations might surpass those last year and the drop in "cooling only" installations would be considerably modified.

Again, the number of air-cooled units reported in the 1957 survey about equalled the 1,039 installed in 1956. Installations of water-cooled equipment dropped precipitously. If the 94 additional units were included, the disparity between air and water-cooled units would no doubt be even greater.

While only 87 self-contained units were installed in 1956, this number rose to 132 in 1957, thanks to the efforts of two contractors. Between them, they sold three-quarters of the total.

In the 1955 and 1956 surveys, the NEWS listed contractors and distributors separately. This year, they are grouped together.

The reason: Almost all distributors sold as contractors in the Memphis area and distributed only to dealers in the outlying tri-state area for which Memphis is the hub.

A few distributors are set apart by an asterisk. These few performed only the distributor function in Memphis, but sold air conditioners to a single contractor or directly to a builder.

How To Make Money Is Chief Contractor Concern

Memphis contractors and distributors reported few problems of their own making. Chief concern was how to make money in the residential market.

From a service standpoint, most had no troubles. Those that did found troubles in application rather than in the equipment itself.

One complained that attic units with small coils and high velocity air would blow water droplets into the ducts. He also had trouble with water getting into controls in remote units when the controls are mounted on the base.

Another reported trouble with coils freezing when added onto small pipe duct systems. He said he corrected this by installing larger ducts.

A third said his only problem was getting enough air in the attic.

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Combines QUALITY and PERFORMANCE WITH LOW COST

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Handy Tube Bender
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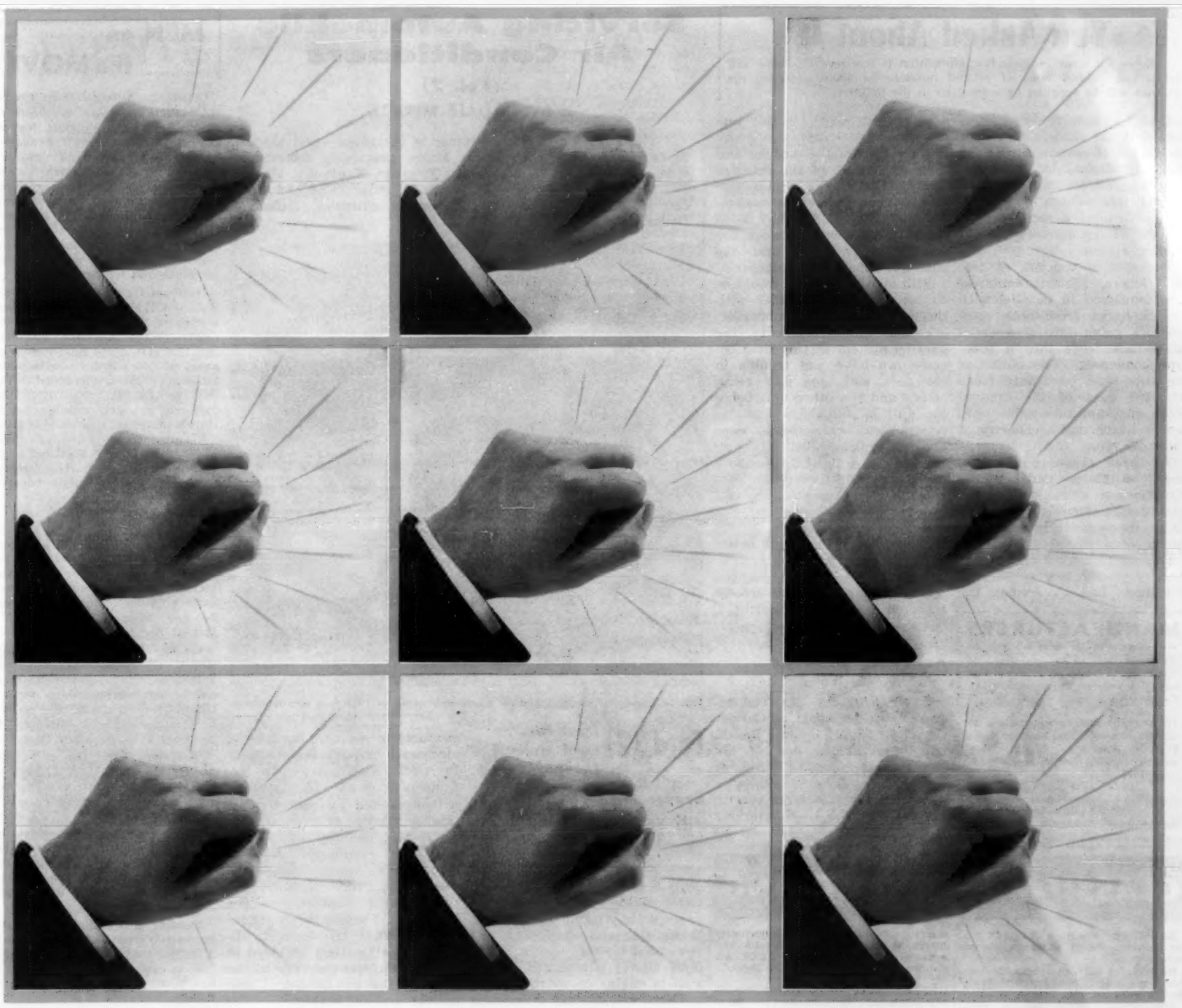

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Ask your own salesmen: How many times have they closed a sale on the first or second call, or even after the third contact with a prospective customer?

They'll agree that it takes constant attention — repeated calls — to sell.

When you're competing for a share of a multi-million-dollar market, you can't afford to let a prospect lose sight of your product story any more than you can afford to limit your salesmen to a single call. That's why advertising is such an important part of successful selling.

Advertising in AIR CONDITIONING & REFRIGERATION NEWS is like having a follow-up call made automatically — at just the right time to move to action the man you must sell.

Advertise regularly in the NEWS — and help your salesmen sell.

AIR CONDITIONING & REFRIGERATION NEWS

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RESIDENTIAL — COMMERCIAL — INDUSTRIAL

The leading air conditioning publication with highest paid circulation in the field.

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You Asked About It

From the many requests for information it receives, the NEWS will select and publish some of general interest. In many instances, the answers will be supplied by authorities in the industry.

This question is being presented to our readers to obtain the benefit of several schools of thought. Replies to this problem should be sent to the NEWS, care of this column.

Q. We need a recommendation for adding a receiver to an existing system.

The system consists of two 94G General Electric compressors connected in parallel with the discharge from both compressors going into a common line which feeds into a tube-type condenser. The outlet of the tube-type condenser feeds into the inlet of the original G-E shell-and-tube-type condenser which had a capacity of about 30 tons.

We need more receiver capacity on this job under certain conditions so we are considering adding a receiver 7-ft. long and 12 in. in diameter into the circuit in some manner.

One plan we were considering is to just add this receiver in the liquid line by feeding the present discharge liquid line from the water-cooled condenser into the inlet of the receiver and then the outlet of the receiver would become the liquid line which feeds the whole system.

Another method would be to insert the receiver between the tube-type condenser and the shell-and-tube-type condenser.

Still another method would be to connect it in parallel with the shell-and-tube condenser. We are not considering the parallel system at this time because we have had trouble in the past with one unit being empty and the other unit being too full of liquid on systems where two condensers were hooked up in parallel.

There is a flooded-type popcicle tank and two Vogt continuous flow freezers on this system.

The refrigerant is 22.

When the popcicle tank is not used for quite a while, eventually all of the liquid is pumped out of this unit and this creates the need for an extra receiver.

C.R.E.—Sioux City, Iowa

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South San Francisco, California

Dr. Smith Honored

SYRACUSE, N. Y.—The research vice president of Carrier Corp., Dr. J. F. Downie Smith, has been named one of six honorary members of the Iowa Engineering Society, joining a select list which includes former president of the U. S., Herbert Hoover.

Servicing Automobile Air Conditioners

(Vol. 2)

BY C. DALE MERICLE

The Ford auto air conditioner is the twenty-first make to be discussed in this series. Makes previously described were A.R.A., Artic-Kar, Frigette, Frigikar, Kauffman, Mark IV, Airtemp, Mobilette, Novi, Vornado, Polar-Temp, American Motors, Buick, Cadillac, Chevrolet, Chrysler, DeSoto, Dodge, Plymouth, and Edsel.

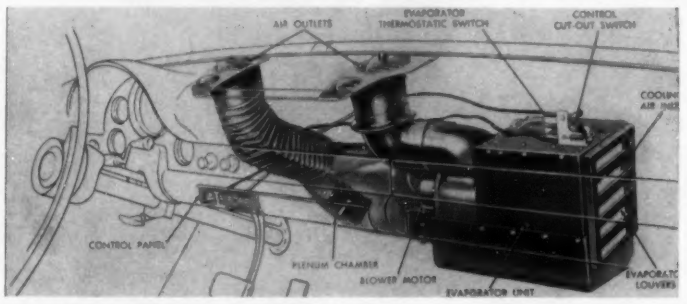

FIG. 1—Evaporator assembly and air distribution system of 1956 Ford air conditioner.

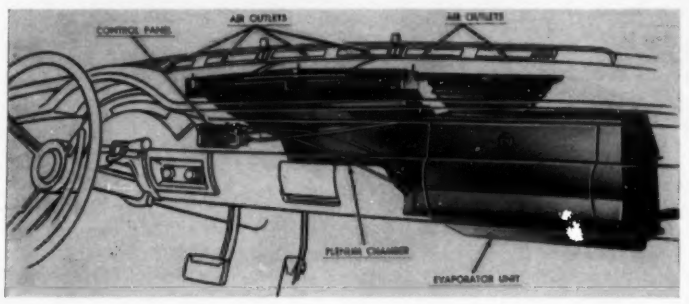

FIG. 2—Evaporator assembly and air distribution system of 1957 Ford air conditioner.

Ford (2)

Ford Div.
Ford Motor Co.
Dearborn, Mich.

Evaporator

Evaporator assembly (Figs. 1 and 2), is located under the dash to the right in 1956 and 1957 Ford systems. This assembly includes the evaporator coil, thermostatic expansion valve with external equalizer, a thermostat, and on 1956 units a two-speed blower. On 1957 systems blower is mounted on fire wall in engine compartment.

There are several differences between 1956 and 1957 models, however, so they will be described separately.

The 1956 evaporator assembly (Fig. 1) has an air intake louver (which is adjustable) on the right side. When maximum cooling is desired, air from the car interior is pulled through this louver and the evaporator coil and then discharged by the blower into a plenum chamber to the left of the evaporator housing.

From the plenum chamber air is ducted to four outlets on the instrument panel. There are two outlets on each side of the radio speaker grille. There are also two doors in the plenum chamber which can be opened to direct cooled (or heated) air toward the floor.

When less cooling is desired, the air intake louver on the evaporator assembly is partially closed and an air valve in the right fresh air intake is partially opened.

The outside air by-passes the evaporator and enters the plenum chamber. Thus higher temperature discharge air is obtained by mixing cooled recirculated air and uncooled outside air.

The 1957 Ford system (Fig. 2) can operate on recirculated air only, 100% outside air, or mixtures of the two, but all the air passes through the evaporator coil, unlike the by-pass arrangement of the 1956 system.

Recirculated air and/or outside air (pulled in from vent in cowl) is forced by the blower into the evaporator housing where it is blown through the evaporator for cooling (or through the heater core for heating). Thence the air goes into a plenum where it is directed to air outlets provided in special defroster openings at the base of the windshield. These outlets are adjustable.

There are also doors on the plenum chamber which can be opened to direct air to the floor or the front seat.

(To Be Continued)

General Register Names Exclusive Sales Agent For Expanded Line

CEDAR GROVE, N. J.—General Air Products Corp. will act as exclusive sales agent for all air distribution equipment manufactured by General Register Corp. here, according to Russell D. Anderson, president.

The expanded line of diffusing equipment now includes circular, rectangular, and slot type diffusers in addition to the standard registers and grilles, it was noted.

Anderson also announced the appointment of Hrant Yousoufian as vice president in charge of engineering. Yousoufian was formerly chief research engineer of Air Devices, Inc.

It was also reported that an over-all expansion of plant production and engineering facilities was moving ahead according to plan "in anticipation of increased demand for the new products being made available."

MEN on the MOVE

Copeland Refrigeration Corp.—RAY WHITEHEAD has been appointed district manager for the eastern seaboard, with headquarters in Syracuse, N. Y. He was formerly associated with Carrier Corp., F. H. Langsenkamp of South Bend, Ind., and Air Comfort Corp., Chicago. J. E. PERRY, refrigeration contractor from Royal Oak, Mich., has been appointed application engineer for manufacturing accounts and wholesalers.

National-U. S. Radiator Corp.—DR. WALTER L. ROSS has been named to direct operations of the newly-created Advance Engineering Div. Dr. Ross has been manager of the firm's development laboratory. He is succeeded in that post by DAVID GOLDENBERG, formerly product engineer for air conditioning. JOHN W. HALL has been advanced to manager of field promotion for the Heating & Air Conditioning Div. He formerly managed the company's advertising program.

Marco Industries, Inc.—R. P. BALLOU has been elected to the new position of vice president-engineering as part of the 1958 expansion program for this manufacturer of fractional horsepower motors. For the past seven years he has been chief engineer of Howell Electric Motors.

Viking Air Products—CLARENCE G. NENADAL has been appointed chief engineer. Formerly chief draftsman, he replaces GEORGE O. GOULD, who recently became advertising director for National-U. S. Radiator Corp.

Wolverine Tube, Div. of Calumet & Hecla, Inc. — WILLIAM N. WHITE has been named sales representative in New York City metropolitan area.

Brunner Div., Dunham-Bush, Inc. —Appointment of D. ROGER BEAUPRE as plant superintendent has been announced. He was chief industrial engineer of Worthington Corp.'s Decatur, Ala. plant.

Heating & Air Conditioning Div., Stewart-Warner Corp.—ROBERT J. ROSE has been named central Illinois district sales manager. He has been a field engineer with the firm.

Owens-Corning Fiberglas Corp.—GEORGE K. HAMMOND has been appointed duct insulation and duct system sales supervisor. Previously he served in sales capacities in transportation and plastics divisions.

Universal Diffuser Corp.—Appointment of WILLIAM H. NEEKAMP as general sales manager has been announced. He was formerly regional sales manager for Anemostat Corp.

Davison Chemical Co., Div. of W. R. Grace & Co.—Chemical technical service activities have been consolidated under F. EMERSON IVEY, JR. He was previously in charge of petroleum catalysts technical service.

Trion, Inc.—JOHN D. HULSER, formerly assistant eastern division manager for Sonotone Corp., has been appointed manager of marketing.

Trane Co.—HAROLD W. MURPHY has been named to the applications engineering department. He is a former assistant professor at the University of Notre Dame, and chief engineer of the heat transfer division of another company.

Admiral Corp.—JOHN C. McDEVITT has been named regional sales manager covering distributors in Charlotte and Raleigh, N. C., Columbia, S. C., Knoxville, Tenn., and Norfolk, Va. He has been a partner and sales manager for Hennigh's Inc., Admiral distributor in Wichita, Kan.

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" $7.50 per insertion. Limit 50 words. 15¢ per word over 50.

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POSITIONS WANTED

SERVICE & CONSTRUCTION mechanic now employed. Would relocate with growing company that could offer year round employment. 20 years as mechanic & department head. Experience! Air conditioning, heating and refrigeration. Can work from prints, lay out wiring & fabricate. R. G. LEONARD, 324 Wilson, Sand Springs, Okla., Phone CIrcle 5-6876, Tulsa, Oklahoma.

SALESMAN COMMERCIAL refrigeration and store fixtures—over 20 years with distributor in charge of department. Considerable experience in low temperature work, slaughter houses etc. References gladly furnished and personal interview can be arranged. Would like to relocate, preferably in the south or southwest, however will consider other locations. BOX A6038, Air Conditioning & Refrigeration News.

YOUNG GRADUATE mech. engineer with 3 years' diversified experience in engineering, contracting, and sales with air conditioning, refrigeration and heating emphasis desires association with consulting engineering or design test development organization offering opportunity for engineering expression in the formulation of designs, job contact and supervision and responsibility. Location near a university. Please reply BOX A6039, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

CHALLENGING OPPORTUNITY for sales engineer and application engineer with a progressive, well-known manufacturer located in Midwest. Should have experience with refrigerating and/or air conditioning systems, particularly low-side application. Position requires some travel. Attractive salary arrangement and opportunity for rapid advancement for capable and aggressive individual. BOX A6033, Air Conditioning & Refrigeration News.

OPPORTUNITY FOR manufacturer's representative: To increase your earnings, sell a full line of freezers, beverage coolers, display cases, dual temperature reachins and walkins. We manufacture a quality line to meet competition. Agents wanted for new territories. Write HOWARD REFRIGERATOR CO., INC., 4745 Worth Street, Philadelphia 24, Pa.

EQUIPMENT FOR SALE

NOTICE: DISTRIBUTORS, dealers, service men, users refrigeration equipment—repair parts available all models Baker ammonia and Freon compressors. We are exclusive Baker export sales office. Manufacturers' export agents refrigeration, air conditioning, and allied equipment. THE KEISER COMPANY, Paul Building, Utica, New York.

REPOSSESSED REFRIGERATION equipment. Air conditioning and freezer applications. Frigidaire, Brunner, Worthington 3 h.p. and 40 h.p. units. Larkin, Bush, Kramer Termobank, freezer blowers. U. S. Air Cond. and Worthington evaporative condensers, Kramer Unicon. Less than ½ of dealer cost. Write for details. ROCKLAND REFRIGERATION, Nyack, New York.

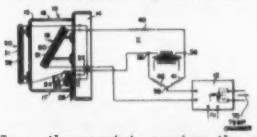
NATIONALLY FAMOUS brand new hermetic motor compressor domes at closeout prices! ⅛ h.p. only $25.00. Other sizes up to 1½ h.p. at equally low prices. Also, tremendous savings on complete hermetic condensing units ranging in size from ⅛ h.p. All brand new, all guaranteed. Send for listing and prices to MANN REFRIGERATION SUPPLY CO., 440 Lafayette St., New York, N. Y. GRamercy 3-8000.

WELL KNOWN brand condensing units: Open type (New) ⅛ hp air cooled - less motor $55.00. 1½ hp water cooled - less motor $144.00. 3 hp water cooled - less motor $175.00. FOB Chicago, Illinois. Send for bulletins and catalog on money saving refrigeration values: WALTER W. STARR, 2833 Lincoln Ave., Chicago 18, Illinois.

PATENTS

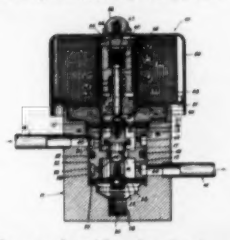
Week of March 11 (Concluded)

2,826,072. CONTROL APPARATUS. Waldo H. Kliever, Minneapolis, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.



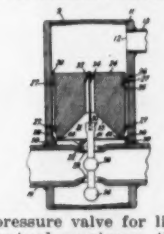
1. In a thermostat sensing the combined effects of heat radiation and air temperature in a space for controlling a temperature changing device, a base member adapted to be mounted on a wall in the space, a cover attached to said base member and having oppositely disposed openings providing for the free flow of air therethrough, a first temperature responsive means. . . .

2,826,215. BALANCED PRESSURE SOLENOID VALVE. Joseph G. Wolfslau, St. Louis, and John E. Dube, Chesterfield, Mo., assignors to Alco Valve Co., University City, Mo.



1. In a solenoid valve having a solenoid for controlling the flow of fluid through a valve port, the combination of a valve housing having an inlet and an outlet connected by a valve port, a valve within said housing connected to a valve stem for controlling the flow of fluid through said port. . . .

2,826,217. RESTRICTOR VALVES. Daniel S. Dickinson, Louisville, Ky., assignor to General Electric Co.

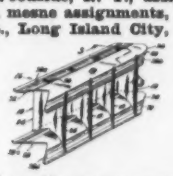


1. A pressure valve for limiting to a predetermined maximum the pressure of gas passing therethrough comprising a housing having outlet porting means and inlet porting means, the latter including a conduit extending transversely in said housing, said conduit including a pair of inlet orifices for admitting gas from sad conduit into said housing, and valve means in said housing. . . .

2,826,220. HEAT EXCHANGE AGITATOR. Fred M. Young, Racine, Wis., assignor to Young Radiator Co., Racine, Wis.

1. An agitator for tubular heat exchangers comprising a strip having arcuate-shaped lobes struck out transversely from the opposite lateral edges thereof, the arc of each lobe being more than 90° of a circle the periphery of which circle substantially embraces the opposite lateral edges of the strip, the axis of which circle is in the median line of the strip. . . .

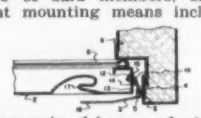
2,826,221. DUCT DEVICES. Bruno Speiser, Woodside, N. Y., assignor, by direct and mesne assignments, to Elgen Mfg. Corp., Long Island City, N. Y.



1. An air guide device comprising a plurality of curved guide blade members arranged in mutually spaced relationship to each other, said guide blade members being rectangular in shape with smooth, straight top and bottom edges. . . .

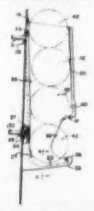
2,826,442. LATCH MECHANISM. Leslie L. Pruehs, Erie, Pa., assignor to General Electric Co.

A latching mechanism for cooperating with a keeper to latch a movable member to a stationary member comprising a latch element having a catch section adapted to engage said keeper, means for mounting said latch element on one of said members, said latch element mounting means including at



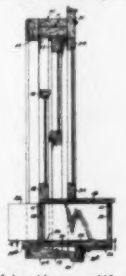
least one pair of bosses adapted to engage and position said element without restraining movement of said catch section. . . .

2,826,471. FROZEN FRUIT JUICE DISPENSER. Allen B. Fonda, Erie, Pa., assignor to General Electric Co.



A dispensing type receptacle for use with refrigerating apparatus having a low temperature compartment and a door providing access to said compartment; said receptacle being adapted to support cylindrical articles in stacked relation on said door and comprising a pair of channel members each having a base wall and a pair of side walls forming a vertically extending channel and having an end wall blocking the lower end of said channel, with one of said side walls and said base wall being provided adjacent said end wall with an aperture opening into said channel. . . .

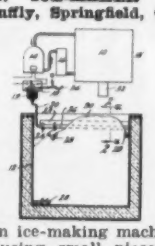
2,826,472. WINDOW AIR CONDITIONER ENCLOSURE. Ferdinand W. Humphner, River Forest, Ill.



1. In combination with a window frame having a bottom baseboard and window sash panels slidably mounted in said frame, a base comprising a platform portion engageable with said baseboard and secured thereto, said platform being adapted to receive thereon an air conditioning unit, an enclosure member extending about the forward end of said unit. . . .

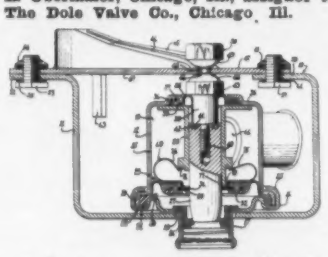
Week of March 18

2,826,899. ICE-MAKER CONTROL. Glenn Muffly, Springfield, Ohio.



1. In an ice-making machine adapted for producing small pieces of ice, a bin arranged to receive said ice as produced, and a movable thermostatic control comprising a thermally responsive portion adapted to extend into said bin when in an operative position and to shut the machine off upon movement to its second position where it does not extend into said bin.

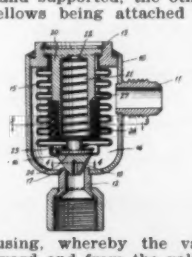
2,827,076. PRESSURE COMPENSATING FLOW CONTROL VALVE. Frank E. Obermaier, Chicago, Ill., assignor to The Dole Valve Co., Chicago, Ill.



1. In a pressure compensating flow control valve particularly adapted for controlling the flow of hot water to a hot water heater for an automotive vehicle, a casing having an inlet and an outlet, a metering pin extending within said casing and mounted for movement therealong toward and from said inlet. . . .

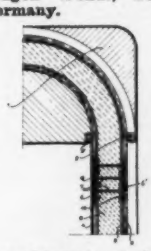
2,827,077. FLOW CONTROL VALVE. Orville Mitchell, Dallas, Texas, assignor to John E. Mitchell Co., Dallas, Texas.

1. A valve comprising a housing having an inlet and an outlet and a valve seat; a valve head movable toward and from the valve seat; a bellows upon one end of which the valve head is mounted and supported, the other end of the bellows being attached to the



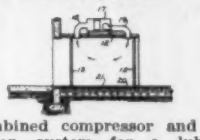
valve housing, whereby the valve is moved toward and from the valve seat by the expansion and contraction of the bellows. . . .

2,827,118. DOOR FOR REFRIGERATOR. Eugen Wendt, Frankfurt am Main, Germany.



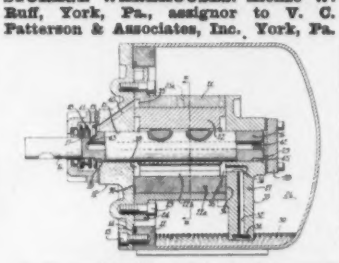
1. In a refrigerator including a casing having an access opening, guides at the sides of said opening, and a flexible rolling door slidable in said guides, said door comprising inner and outer flexible walls provided with internal spacers forming cells, and a plurality of flexibly connected stiffening members, said stiffening members secured to the outer sides of the walls and having a cross-sectional profile to overlap one another.

2,827,226. REFRIGERATION APPARATUS. Alex A. McCormack, Bay Village, Ohio, assignor to Thompson Products, Inc., Cleveland, Ohio.



A combined compressor and forced lubrication system for a lubricant-containing fluid, comprising a rotating drive shaft supported at two spaced points by bearings, a rotor driven by said shaft between said bearings, a compressor casing comprising an annular cam track, radial slots in said rotor, vanes slidable in said slots. . . .

2,827,266. VESTIBULE FOR COLD STORAGE WAREHOUSES. Alonzo W. Ruff, York, Pa., assignor to V. C. Patterson & Associates, Inc., York, Pa.



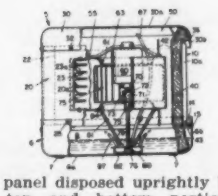
8. In combination with a refrigerated storage space, the temperature of which space is maintained at the order of 0° F., a vestibule communicating with the storage space and affording an entrance and exit for load carrying vehicles to and from said space, the air temperature in said vestibule being substantially higher than the temperature in said storage space. . . .

2,827,270. EVAPORATION COOLER. Thomas B. Martin, Pacific Palisades, Calif., assignor, by mesne assignments, to William L. Rawn, Jr., Robert J. Barnes, and Dickinson B. Barker, Los Angeles, Calif., as tenants in common.

1. In an evaporative cooler, a hollow casing having opposed vertically spaced top and bottom portions, said top portion having a top wall and depending side walls and said bottom portion having a bottom wall and upright side walls defining a water reservoir, a

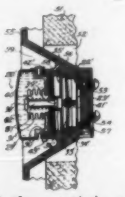
Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented

Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Address orders to: Commissioner of Patents, Washington 25, D.C.



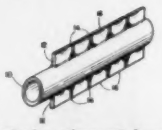
front panel disposed uprightly between said top and bottom portions and having an air outlet. . . .

2,827,534. WALL THERMOSTAT. John H. Grayson, Monrovia, Calif., assignor to General Controls Co., Glendale, Calif.



1. In a wall thermostat: a plate-like base member adapted to be mounted on a wall so as to cover an opening therein, said base member having at its back a thickened portion adapted to project into said wall-opening, and having in its front surface a recess extending into said back portion; a thermostat mounted in said recess; said recess being open at its front so that said thermostat is exposed and deep enough to receive substantially all of the thermostat; and thermostatic means in the outer portion of the thermostat responsive to the ambient temperature thereat. . . .

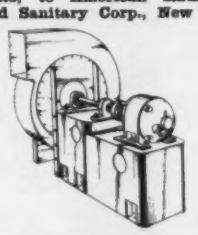
2,827,551. METHOD OF FABRICATING TUBES FOR HEAT EXCHANGERS. Malcolm W. Orr, Jr., Signal Mountain, and Thomas L. Mabery, Chattanooga, Tenn., assignors to Combustion Engineering, Inc., New York, N. Y.



1. In a tubular element having laterally extending tab-like fin means the method of fabricating said element comprising bonding the fin means to the tube by moving a localized heat zone in the form of an electric arc along the junction of the fin means and tube with said zone being of sufficient intensity to fuse the fin means and tube as it moves along. . . .

DESIGNS

189,336. FAN UNIT. John B. Koch, Detroit, Mich., assignor, by mesne assignments, to American Radiator & Standard Sanitary Corp., New York.



June 1-7 Proclaimed National RSES Week

CHICAGO—June 1 to 7 is National Refrigeration Service Engineers Society Week.

H. T. McDermott, RSES international secretary, said he expected approximately 40 state governors to sign proclamations setting aside this week for those men engaged in the installation and service of refrigeration and air conditioning equipment.

Last year, the first year it was proclaimed, 16 governors issued proclamations.

Joe A. Sever, Los Angeles serviceman and chairman of the National RSES Week Committee, has championed the idea.

Sever said no activities were specifically planned for the week. He urged local chapters, however, to call attention to the refrigeration serviceman's contribution "to the health, welfare, and comfort of the public."

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

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If your profits and business reputation are built with each job you do, use White-Rodgers for replacement service . . . and on every order for new equipment write "Ship with White-Rodgers Controls."

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ASRE-ASHAE--

(Concluded from Page 1, Col. 3)

cieties will receive a copy of the plan, it was indicated.

In conformance with the laws of the state of New York, the consolidation of two New York membership corporations (both Societies being so incorporated) requires the affirmative vote of two thirds of the members voting, in both societies.

Following is the tentative schedule of action:

"1. The Committee on Cooperation, formally charged by the Councils of both Societies to develop a plan for merger, has been requested to present further details to the Councils at the forthcoming national meetings of the Societies.

"2. A proposal for an agreement of consolidation of the two Societies will be presented to the membership (at the General Assembly, Monday morning, June 23) for vote as to whether it shall be submitted to the members for consideration and action at the next semiannual meeting of the Society.

"This will *not* be a vote on the merger, but will be a vote to submit the proposition for membership vote at the 45th semiannual meeting of the Society in December, 1958.

"3. Assuming that this vote for submission is favorable, the agreement of consolidation and the essentials of the plan of the Cooperative Committee will be placed in the hands of all voting members of the Society for their study.

"4. It is the recommendation of the president of the Society that the proposed merger be a subject for formal discussion at Section meetings prior to the meeting in December.

"5. In accordance with the membership corporation laws of New York the agreement of consolidation would be voted on by the voting members at the 45th semiannual meeting.

Urges Opposition To Anti-Bid Shopping Bill

WASHINGTON, D. C.— With the end of the present session of Congress only about two months away, Wilbur S. Hokum, president of the National Association of Plumbing Contractors, has urged contractors to write one more round of letters to their Senators expressing opposition to H.R. 7168, the so-called anti-bid shopping bill.

These letters are needed, Hokum contended, because "strong forces are making every effort to have this bill scheduled for debate by the Democratic Policy Committee. Unless we continue to express our opposition, this very damaging bill is in danger of becoming law."

Redmond W. Walsh Dies

DETROIT — Redmond W. Walsh, recently retired manager of Kelvinator's Detroit zone, died here recently after a brief illness.

He joined Kelvinator as credit manager in 1929. His tenure as zone manager was the longest in Kelvinator's history.

MCAA-NAPC--

(Concluded from Page 1, Col. 2)

similar representatives from NAPC for the purpose of considering mutually desirable terms for merger or consolidation of these two or any other related trade association having these common interests.

The representative exploratory committee shall report to the board of directors at its fall meeting, and to the 1959 convention through the directors, the result of its conferences.

Affiliated associations of MCAA were asked by the resolution to appoint representatives if they wish to be included in an advisory committee which will confer with the representative exploratory committee before they confer with NAPC.

The advisory committee members would present views and discuss the basis for consideration of consolidation. Their expenses would be paid by the affiliated association they represent.

Affiliated associations must advise the national MCAA office by July 1, 1958, if they want to be represented on the advisory committee.

A report of the representative exploratory committee's action must be provided to MCAA members 45 days before the 1959 convention.

April Room Unit Sales By Distributors Rise In Washington, D. C.

WASHINGTON, D. C. — Distributor sales of room air conditioners (including 1 hp.) in metropolitan Washington in April totaled 2,735 against 1,578 in the same month of 1957, a report by the Electric Institute of Washington indicates.

Apprentice Funds--

(Concluded from Page 1, Col. 4)

limits mechanical specialties contracts—such as for air conditioning, heating, piping, and refrigeration—to within 5 ft. outside the building line.

"It means," he asserted, "that all of your work and ours which is more than 5 ft. from the building will very likely go to some other contractor and some other workman.

"This little clause in the bill is very apt to set the pattern for the entire construction industry. This little clause is loaded with nitroglycerine for all of us sitting here today."

He asserted that the U. S. Corps of Engineers has been doing work this way more and more. Now the Atomic Energy Commission is following suit.

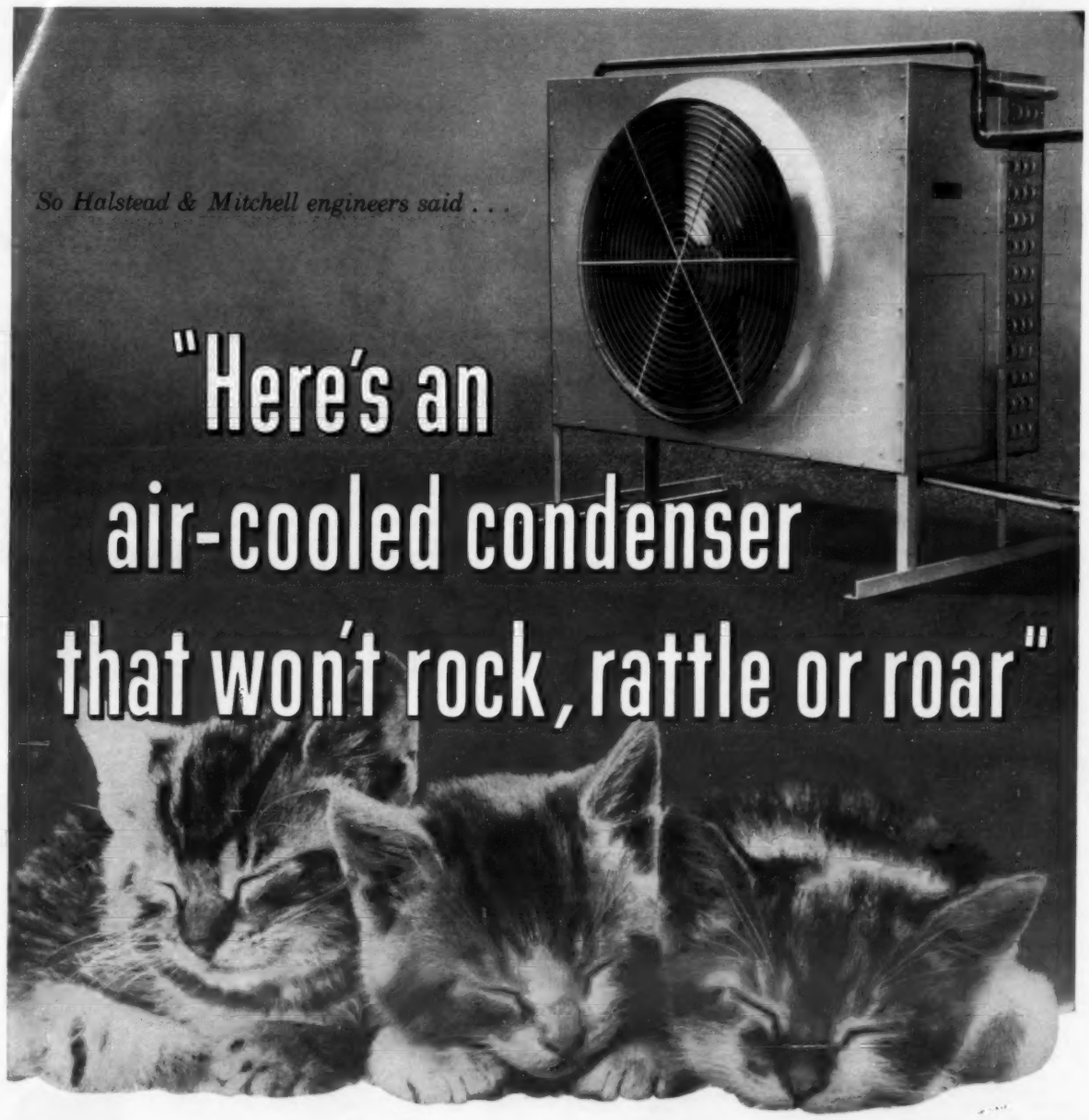
He also attacked the bill for recommending the single contract system of procurement giving the general contractor sole responsibility for completion of the contract.

"In other words," he said, "the policy of the Federal government would favor the general contractor in preference to separate contracting for all mechanical specialty work. . . .

"Gentlemen, if you want my frank opinion, this bill is designed for the very purpose of shoring up the general contractor's claim on government work and laying at rest, once and for all, the fight for a decent bill.

"This bill is actually a permanent legislative guarantee of bid shopping during an ironclad open season after every general bid becomes public."

The union leader pledged every possible effort on the part of UA to follow the 10-point AFL-CIO policy of increasing efficiency on the job and eliminating wasteful job practices.



They planned it that way. H&M Air-Cooled Condensers had to be free of the vibrations, rattles and fan noise that plagued so many competitive models. And comments from contractors and users prove they hit their target.

The extra rugged casing won't loosen with use. Lock-tight construction avoids annoying rattles. Four-bladed, deep pitch fans are driven at slow speed for really quiet operation.

Halstead & Mitchell condensers are dependable, too. Large coil and exclusive Turbu-Flo design add more surface, improve heat transfer by up to 15%. Wide fin spacing prevents condenser clogging by dirt or other air-borne particles.

Designed for use with Refrigerants 12 or 22, H&M Air-Cooled Condensers are available in twelve models, from 3 to 50 tons capacity. Floor or ceiling mountings. Multiple circuiting for specified requirements, at no extra cost. Centrifugal Fan models are available for inside installations requiring ductwork.

Ask for H&M Air-Cooled Condensers at your distributors, or write for literature. Halstead & Mitchell, Bessemer Bldg., Pittsburgh 22, Pa.

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